MAY, 1946

Welding Methods

ADEQUATE LIGHTING FOR NIGHT WORK by power shovel is provided by two floodlights on cab roof and two lights on front of cab skirt, served by gasoline engine-driven generator.

RESEARCH

That seeks and develops new and better products

• Inland metallurgists continually strive for perfection, a goal that can never be fully attained. Theirs is a constant search to obtain from the materials and the furnaces improved results in the making of Inland Steels.

This work goes on endlessly in Inland's efficient metallurgical laboratories.

We are determined to derive the utmost from all our materials and facilities. Processes and processing controls are improved as techniques are advanced . . . and new products for many uses are developed!

Research . . . consistently and successfully applied . . . is a part of Inland's service to you!

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★ Inland Steel Company, 38 S. Dearborn St., Chicago 3, Ill., Sales Offices: Cincinnati, Detroit, Indianapolis, Kansas City, Milwaukee, New York, St. Louis, St. Paul.

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TECHNOLOGY DEPT!

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McGraw-Hill Publishing Co., Inc., 330 West 42nd St., New York (18)

Construction Methods

A Pictorial Survey of Current Practice, Equipment and Materials

A. E. PAXTON, *Publisher*
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Cuts and Fills

Last month we mentioned here the prospects of a three-quarter billion yard dirt-moving job at the Panama Canal. That job is in the nebulous future, but Garrison Dam on the Missouri in North Dakota is ready to go, in fact preliminary dirt is already flying. While the yardage involved is a mere tenth of that mentioned for the Panama job, 75 million cu.yd. of rolled fill is still a lot of dirt in anybody's dam. Garrison offers unlimited opportunity for improvement and expansion in dry dirt-moving equipment and methods. Out of the clay buttes of North Dakota may come something new and better in construction. Next month's issue will describe what is ahead at Garrison Dam for the contractor.

* * *

Speaking of the Panama job, the Panama Canal is appealing for engineers and geologists on the investigation and studies of that project. Interested persons should apply to Chief of Office, The Panama Canal, Washington 25, D. C. Here's a chance for foreign experience.

* * *

WARNING! Tie down your heavy equipment at night. Clark County, Wash., road commissioners report the theft of a motor patrol grader. More precious than gold has become construction machinery today. Perhaps we'll see tractors and shovels parked in bank vaults if the current shortage gets any worse.

* * *

A group of Veterans with construction experience is trying to organize a cooperative construction company for the cooperative construction of their own homes in Yonkers, N. Y. We wish them luck, but from this mid-Manhattan perch it looks as if more homes for veterans could be built, and just as cheap, at that, if the veteran building mechanics would work for established contractors. At least a lot of housing headaches would be avoided.

* * *

Army Engineers at The Engineer Board have proved that proper equipment lighting increases night work safety and efficiency. A few extra lights of the right kind are cheap in relation to results achieved.

HERE'S HOW IN THIS ISSUE

SPECIAL MACHINES speeded canal paving —p. 83

ALUMINUM ROOFING was installed on terminal dome —p. 86

ARC-WELDED RODS strengthened bridge floor —p. 90

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GROUT was applied to rock-faced retaining bank —p. 99

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HANGAR was converted to truck repair shop —p. 103

QUONSET HUT was modified for Seabee chapel —p. 104

WELDED SUB-TRUSS held bridge during repairs —p. 106

TRACTOR-SLED TRAINS hauled supplies over ice —p. 111

WEDGE-SHAPED INSULATION soundproofs laboratory —p. 114

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JAMES H. McGRAW, Founder and Honorary Chairman

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You get all 3—

POWER — 75 Diesel horsepower — more than enough for the toughest kind of work. 2-cycle engine efficiency and economy!

TRACTION — 21,500 lbs. total weight...with 15,660 lbs. concentrated on the four rear Tandem wheels, that drive together . . . as a unit!

CLEARANCE — 22-inch front axle clearance allows material to flow freely to moldboard — no hanging-up on windrow, no wasting h.p. pushing a dead load.

Plus a full range of blade positions and lear...g front wheels to handle all types of grading with ease.

Plus simplified operation — easier steering and control, electric instruments, electric brakes, full operator comfort.

Plus a larger capacity, longer life, easier-to-operate clutch . . . gears that automatically lock in place . . . a tubular frame that resists all twists and strains.

Together these Model A-D features mean more work done, more accurately, at lower cost...a better job on every job!

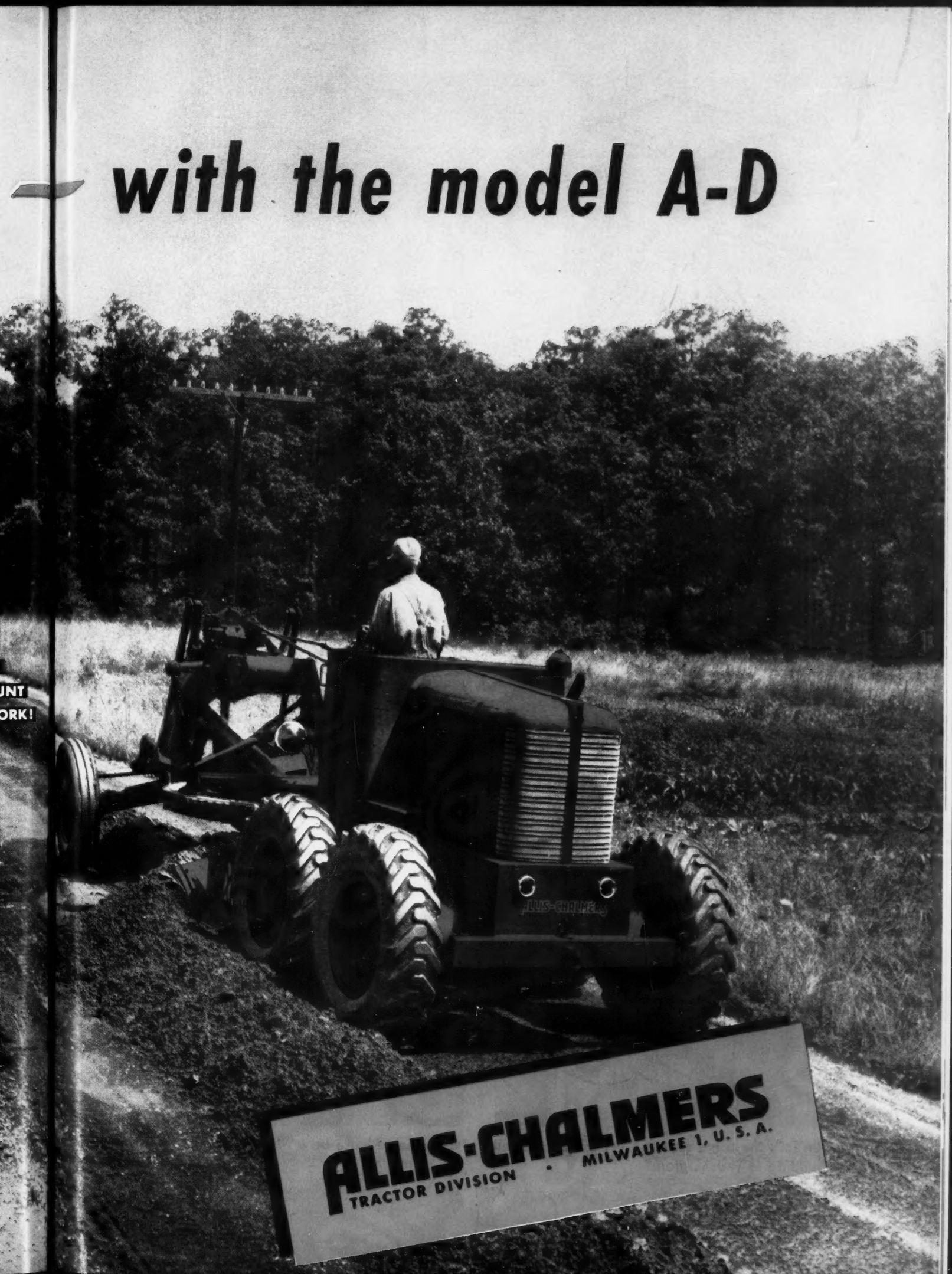
THE A-D MAKES
EVERY PASS COUNT
ON *EVERY* JOB!..

SLOPING

DITCHING

GRADING
SURFACE

with the model A-D



THE JOB JESTER

CARTOONS DRAWN FOR CONSTRUCTION METHODS

"I can't give you a raise just now, Bartley, but I can transfer you to the maintenance section."

"We run into the same situation every time we put up a building in Washington."

"Oh, dear. Please be a little more careful with that hot metal."

'INCOR' POINTS THE WAY

Western Foundation Company, of New York and Chicago, is driving 42,000 pile points for Stuyvesant Town, nation's largest housing project.

Pile points are cast in an old building on the job site. Fast thorough curing with 'Incor' speeds production, assures high strength for early driving.

STUYVESANT TOWN, the nation's largest slum-clearance project, will house 8761 families in 35 13-story fire-safe apartment buildings which Starrett Bros. & Eken, Inc. are erecting for Metropolitan Life Insurance Company on a 75-acre site in lower New York City. Foundation work follows right on the heels of demolition of 500 time-scarred tenements and other structures.

Western Foundation Company, of New York and Chicago, is driving 42,000 concrete pile points, cast on the job-site with 'Incor' 24-Hour Cement. And 'Incor' sure has performed! Even in coldest weather, 'Incor' pile points were driven to bearing with 5-ton hammer within 72 hours after casting—and newly-cast 'Incor' points have been driven through concrete foundations and other sub-soil obstructions.

Time was never so expensive as it is today—let dependable 'Incor' high early strength help you hold costs in line. Plan new structures, additions, alterations with 'Incor'* 24-Hour Cement . . . save 50% on hard-to-get form material and expensive make-up, reduce time and overhead . . . get earlier completion at less cost.

*Reg. U. S. Pat. Off.

LONE STAR CEMENT CORPORATION
LONE STAR PORTLAND CEMENT
'INCOR' HIGH EARLY STRENGTH PORTLAND CEMENT
"INCOR"
LONE STAR AIR-ENTRAINING PORTLAND CEMENT

LONE STAR CEMENT CORPORATION

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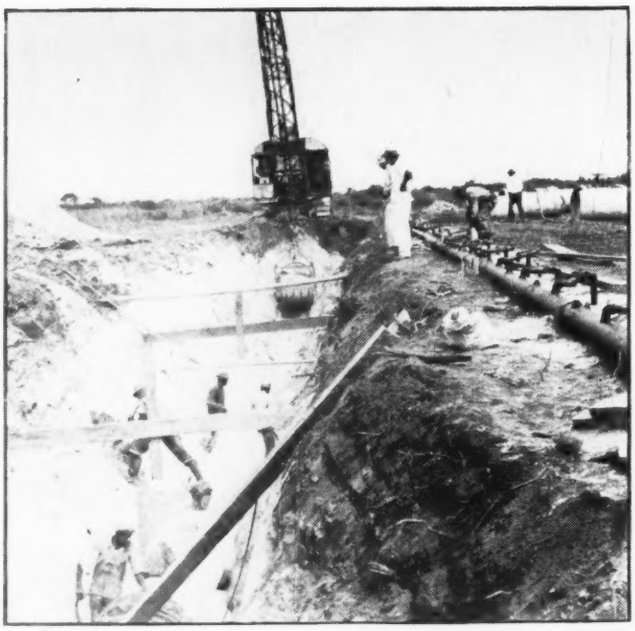
LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 15 MODERN MILLS, 25,300,000 BARRELS ANNUAL CAPACITY



4/10
"Started to Pump"

4/11
"Job Bone Dry"

So reports our demonstrator on the sewer foundation shown here. QUICK ACTION? Yes! But that's to be expected when a MORETRENCH WELLPOINT SYSTEM starts working on a wet job.

You can expect to save money as well as time — to eliminate the innumerable and heavy expenses connected with fighting water. In short, you can expect to construct your job by "dry" methods with all the attendant savings.

We frequently hear contractors say "If I had known more about wellpoints and what they can do, I could have saved plenty on such and such a job."

If you're in the dark about what Moretrench pumping equipment can accomplish, write for a copy of our catalog. It covers the use of wellpoints on practically every kind of work, in every type of material.

And, when you're bidding a wet job, ask us for an estimate; get our ideas on how to do the work economically. Large or small, your inquiry will rate immediate, expert attention.

MORETRENCH CORPORATION

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FAST...CLEAN EUCLID DUMPING Cuts Costs

● Fast, non-stop dumping and accurate spotting on the fill are time-saving and cost-cutting features of Bottom-Dump Euclids.

The large, full length and width trailer doors open instantly by gravity — they are unlocked by operation of an air valve on the steering column. Smooth, steep hopper sides of the Bottom-Dump Euclid shed the load quickly and cleanly. Adjustment of the door opening permits dumping the load in long windrows or large heaps on the fill, depending on the job requirements.

Doors are closed by engaging a driving wheel with the left trailer tire which winds the door cable on a drum of the control assembly. In a short travel distance the doors are fully closed and locked in position — driving wheel of the door control is then automatically disengaged from the tire.

The simple but rugged construction of the famous Euclid door control . . . its reliable performance and long life . . . is typical of Euclid features that result in lower hauling costs for leading contractors and industrial owners. Your Euclid distributor will be glad to provide facts and figures on what Euclids can do for you.

BOTTOM-DUMP EUCLIDS. Capacities of 20 to 32 tons — 13 to 42.9 cu. yds., struck . . . loaded speeds from 26 to 34.4 m.p.h. . . . powered by 150 to 275 h.p. Diesel engines.

REAR-DUMP EUCLIDS. Capacities of 15 to 22 tons — 9.2 to 20.7 cu. yds., struck . . . loaded top speeds of 22 to 35 m.p.h. . . . powered by 150 to 275 h.p. Diesel engines.

The EUCLID ROAD MACHINERY Co.
CLEVELAND 17, OHIO

The big, sturdy hopper of the Bottom-Dump Euclid is wedge-shaped to place a large part of the payload on the drive wheels for proper weight distribution and improved traction. The shallow load over the trailer wheels is discharged first, thus maintaining maximum traction on drive wheels until the complete load is discharged from the hopper.

BACK AGAIN!

Handiest of the Handy SKILSAWS

• A real companion for your larger SKILSAWS . . . you'll want Model "67" for cutting sheathing, roofing, sub-flooring . . . to use on ladders, scaffolding, platforms. Only 15½ inches long . . . only 11½ pounds in weight . . . packed with the heavy duty power and stamina that have made SKILSAWS the first choice of builders everywhere for a quarter century. Like all SKILSAWS, Model "67" speeds your work and cuts your costs. Call your distributor today for a demonstration!

SKILSAW, INC. • 5033-43 Elston Avenue, Chicago 30, Illinois

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PORTABLE ELECTRIC

SKILTOOLS

MADE BY SKILSAW, INC.

A development of

B.F. Goodrich

FIRST IN RUBBER

This tire has a flat footprint—rolls easily in mud and dirt, doesn't side-slip

CONTRACTORS who use towed vehicles having free-rolling wheels . . . such as scrapers, trailers, dirt wagons, etc. . . . have hard going in soft earth or mud. Side slippage is a headache. Hard pulling increases power and fuel usage. And when tires under ton-loads hit damaging obstructions, bruise breaks often lead to expensive repairs. Job costs mount; profits decline.

A few years ago B. F. Goodrich engineers dug into the problems. They analyzed the peculiar tire requirements for towed vehicles. Then they designed a special tire with large contact area for maximum flotation, a tire that rolls freely, resists side-slip.

This tire, called the "Earth Mover," is shown above. Note how the large tread surface touches the ground—the special shoulder contour adding to the large contact area. This gives the Earth Mover a large, flat "footprint" that helps it float over soft mud and dirt. It also gives long, even wear when used on well-maintained haulage roads.

Note, too, the continuous running ribs with no "humps" in the tread design. This gives unusually easy rolling—means that *less* power is used in tough going. The heavy curb strips along the sidewall protect against scuffing. The sharp edges across the tread surface width give positive protection against side slippage.

The "inside" advantages are great, too. The tread rubber is especially compounded to give long, even wear. The special cord body construction, with *four to six breakers,* gives extra bruise resistance and protection against breaks.

Users of the Earth Mover—and of other B.F. Goodrich Tires *designed* to meet special needs—report longer tire wear. Time savings are great. Repair bills are lower. Delays are reduced. It's a safe bet that you, too, can make savings with the B. F. Goodrich tires that suit *your* needs. See the B.F. Goodrich dealer, or write us direct. *The B.F. Goodrich Company, Akron, O.*

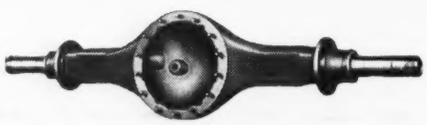
Truck Tires BY

B.F. Goodrich

MORE THAN YOU ASKED FOR!

The new Timken S and U Series Axles* are the axles you asked for to whip your heavy-duty hauling problems—*and more too!* They're packed with every modern axle feature Timken's 40 years of experience can muster. They're big, tough and smooth-running. And they are in production now! Check the features below. Then do what good business sense tells you to do—specify Timken S or U Series under the next heavy-duty trucks you buy!

HOUSING



• New design for uniform distribution of load-carrying stresses with minimum weight • Ground alloy-steel sleeves inserted under great pressure • New exclusive "vertical-plane" inner oil seal maintains constant sealing pressure under all degrees of bearing adjustment.

FINAL DRIVES

Single-Speed Double-Reduction (S and U 200)

2-Speed Double-Reduction (S and U 300)

Single-Speed Double-Reduction (S and U 200)

•New hypoid-bevel gearing • Greater spiral angle of hypoid pinion permits more teeth in contact—reduces tooth loading • Teeth of helical gear and pinion are inclined across face, resulting in over-lap of tooth contact and lower individual tooth loading • All bearings (Timken tapered roller bearings) are adjustable • Shim adjustment for positioning of hypoid pinion with gear • Differential carrier legs supported in axle housing for greater rigidity • Hypoid pinion bearings mounted in removable cage • Single-speed final drive and 2-speed final drive are interchangeable.

2-Speed Double-Reduction (S and U 300)

• Combines for first time advantages of hypoid-bevel gearing with those of helical spur gearing. *Axle may be operated indefinitely in low range without damage* • New Timken Easy-Power Shift permits effortless change of axle ratios as required for speed, load or road conditions. Change from one ratio to another accomplished without loss of vehicle speed by selector and accelerator action only—no clutch action required • Built-in shifting mechanism—lubricated by gear lubricant. Vacuum or compressed air power chamber attached directly to gear carrier • Other features same as Single-Speed Double-Reduction final drives (see above).

DIFFERENTIALS

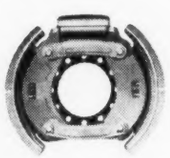
• New 9-16 tooth combination gives larger-diameter pinion—stronger teeth in gears and pinions • Pinions have longer hubs for increased bearing area on differential spider • Spiders have larger-diameter trunnions • New forged-steel differential case of symmetrical design.

SHAFTS

• New high-carbon steel with new heat treatment • New shaft design eliminates failures at splines • Timken "Torsion-Flow" method of forging flange makes grain structure conform to shaft profile for equal distribution of stresses • Sixteen slant-side splines with increased root diameter permits maximum shaft body diameter.

BRAKES

P Series Power Brakes



DP Series Hydraulic Brakes

P Series Power Brakes

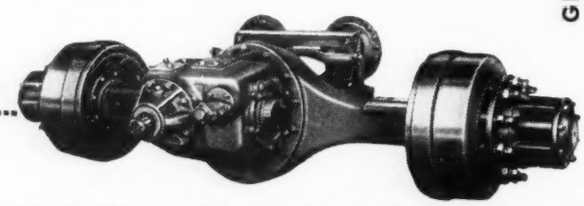
• Constant-lift cam and shaft forged integrally with 1½" diameter shaft. Needle roller bearings reduce cam friction to minimum • Equipped with Timken Econo-Liners—crescent-shaped, ¾" thick • Open-type brake spiders provide cooling inside drum and prevent air pockets. (Dust covers available for gravel conditions.) • Heat-treated, rust-proofed, pre-lubricated roller cam followers and pins of large diameter reduce friction and wear • New transfer bar hook-up—protected location for brake chambers • Interchangeable with DP Series Hydraulic Brakes.

DP Series Hydraulic Brakes

• The only *true* heavy-duty hydraulic brake made today because it has open-type construction, ¾"-thick crescent-shaped liners, and extra-heavy construction throughout • Simple two-shoe single-wheel cylinder design • Greater stopping ability at any given line pressure. Both shoes function as primary shoes in both forward and reverse directions • Equal braking ability in reverse • No change in parts required for either right- or left-hand installation • Shoe and lining assembly identical for all positions • Brake shoes removed for relining by simply removing one retainer spring. Wheel cylinder piston clamp not required.

GENERAL

• Advanced-related design provides great interchangeability of parts • Final drives interchangeable using same axle housing, shafts, etc. • Modern lubrication system • New increased ground clearance for off-the-road operation • Built by Timken—backed by over 40 years of axle and brake experience.



***FOR ALL HEAVY-DUTY HAULING**

S Series axles are for heavy-duty hauling on streets and highways where permissible loads are over 18,000 pounds at the tires on the ground. U Series for even greater load carrying capacity and off-the-highway operation. "200" designates SINGLE-SPEED Double-Reduction Final Drive "300" means 2-SPEED Double-Reduction Final Drive. Torque capacity of all axles designed for modern high-power engines. Data on aluminum housing, hubs and brake shoes for S-200 available upon request. (Above: Timken U-300 2-Speed Double Reduction Axle with front-mounted Easy Power Shift.)

The Accepted TIMKEN AXLES Standard

TIMKEN AXLES

THE TIMKEN-DETROIT AXLE CO., DETROIT 32, MICH.
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Another Northwest in ROCK"

It's the most up-to-the-minute piece of equipment in the field for TOMORROW!

INDEPENDENT CROWD plus AUTOMATIC CROWD
FOR GREATER DIGGING POWER
The DUAL CROWD

REMEMBER, if you have a real Rock Shovel you are equipped to make a profit in any kind of digging. Here is Strong and MacDonald in one of the typical rock cuts of the Pacific Highway — 336,000 cu. yds. of excavation — virtually all of it rock. Any machine that can slug into this kind of digging hour after hour, day after day, will find other types of digging easy.

That is the kind of shovel ability you are going to want — the kind of shovel ability you are planning for on those coming jobs.

With the Northwest Dual Independent Crowd and the Northwest Welded Shovel Boom, the "Feather-Touch" Clutch Control that assures easy operation, yet permits the feel of the load, the Cushion Clutch and Uniform Pressure Swing Clutches, and other Northwest advantages you have a real Rock Shovel! If you have a real Rock Shovel you can make a profit in any digging.

We'll be glad to send you details on the type and size machine you are interested in for your future plans.

NORTHWEST ENGINEERING COMPANY
1728 Steger Building, 28 E. Jackson Boulevard, Chicago 4, Illinois

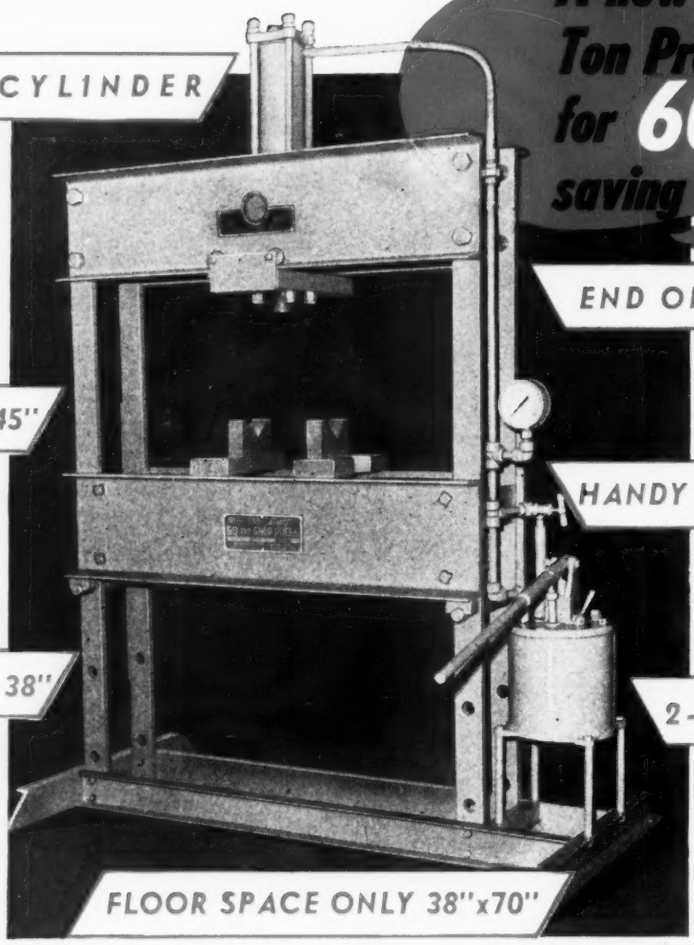
NORTHWEST

SHOVELS • • CRANES • • DRAGLINES • • PULLSHOVELS

If you have a REAL ROCK SHOVEL you never have to worry about output in dirt!

RODGERS "Sixty" SHOP PRESS

A new 60 Ton Press . . . for 60 time-saving uses



MOVEABLE CYLINDER

Cylinder is adjustable completely across top bolster — mounted on four rollers that ride on the bolster channel. Ram travel 2½" per stroke of pump. Cylinder detaches from press and with added hose may be used as a jack, clamp or press in any position.

WIDE WIDTH — 45"

Working space on bolsters (45") permits the entrance of large gears, wheels or pulleys. 10" opening between front and back bolster.

ADJUSTABLE 8" to 38"

Working daylight between top and lower bolster adjustable from 8" minimum to 38" maximum. Bolster is raised and lowered by a hand crank.

END OPENING — 8"

Long work may be slid through either end of the press without encountering any obstructions. The opening between the columns is a full 8".

HANDY VALVE & GAUGE

The hydraulic gauge marked in pounds and tons and the quick opening valve are located at the right side of the press, above the hydraulic pump, for convenience of the operator.

2-SPEED PUMP

2-Speed pump, sturdy and simple, self lubricating, needs no attention. Ram moves 2½" each stroke of pump when pump is set for high speed — giving up to 2,000 lbs. pressure in rapid travel. Flip of lever changes pump to high pressure.

FLOOR SPACE ONLY 38"x70"

The "Sixty" requires small amount of floor space, only 38" x 70". Performs many operations such as: pressing, straightening, bending, shearing, clamping, broaching, riveting and assembly work.

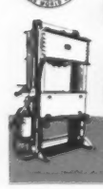
OTHER RODGERS PRESSES . . . are described in this catalog. Included are the Rodgers 100 ton and 150 ton Shop Presses, and the Rodgers Portable Universal Press. Write for your copy.

THE Rodgers Model "Sixty" 60 ton Shop Press is ideal for machine shops, tool rooms, garages, tractor or farm service stations, highway repair shops and repair plants or many industrial projects — you will find that one or more in your shop is a good investment that will pay dividends quickly. It is also available in a special size with a daylight opening from 8" to 48".

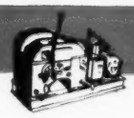
Write or wire today for complete details.

Rodgers Hydraulic, Inc.

HYDRAULIC POWER EQUIPMENT

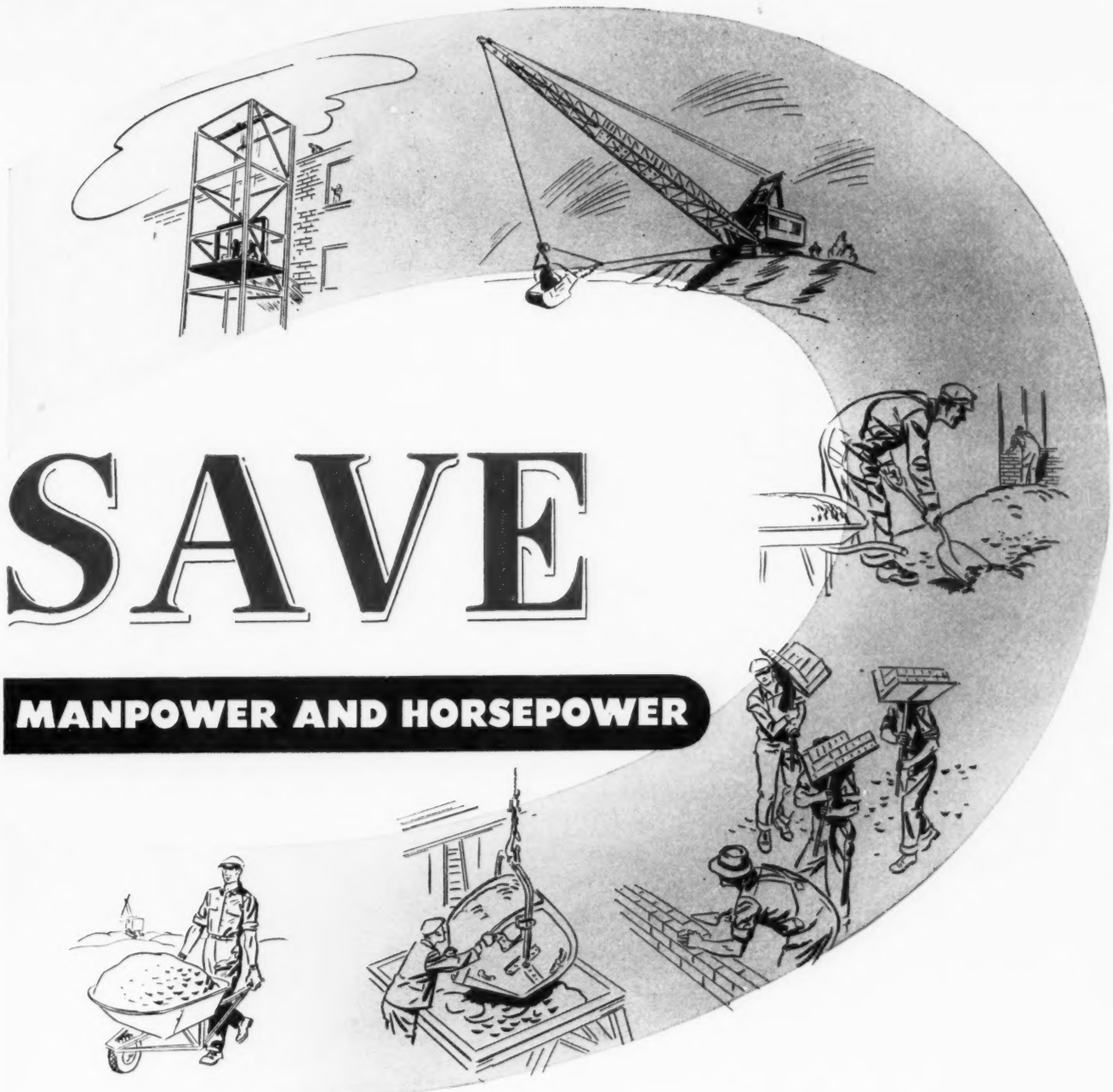

Shop Presses

Crawler-Track Presses


Power Pump Units

Portable Presses

7403 Walker St., St. Louis Park, Minneapolis 16, Minn.



SAVE

MANPOWER AND HORSEPOWER

Use ALCOA ALUMINUM *Building Tools . . .*

Shovels, wheelbarrows, hods, hoist elevators, scoops, draglines—these building tools can well be made of Alcoa Aluminum. The lighter weight of aluminum hand tools saves the productive energy of manpower, speeds construction, while on big equipment you lighten power loads, save wear and tear—do a more efficient and economical job all around. Alcoa Aluminum for building materials in the form of structural shapes, sheets, castings, is also solving many difficult construction problems where resistance to corrosion, durability and high strength are important factors. Our engineers will gladly discuss these problems with you. Call your nearby Alcoa sales office or write ALUMINUM COMPANY OF AMERICA, 1865 Gulf Building, Pittsburgh 19, Pennsylvania.

ALCOA FIRST IN **ALUMINUM**

ALCOA ALUMINUM

The Best Combination-

INTERNATIONAL

The International TD-18, six-cylinder Diesel TracTracTor. This power-packed crawler will take all the punishment your toughest jobs can give it! Low cost for fuel—minimum maintenance—ruggedness that assures long-lived service in powering the construction jobs of today and tomorrow—backed by International Harvester's world-wide service organization.

TracTracTors AND *the Finest* OF MATCHED EQUIPMENT

ONE outstanding advantage in buying International Tractors for any power application is the excellence of perfectly matched equipment available for use with them. Through International Industrial Power distributors you have available the 'dozer blades and other earth-moving tools that are best adapted to construction operations at your locations.

Thus, you have the best combination for profitable operations: (1) the unbeatable operating economy of power-packed International Crawlers and (2) the finest of time-tested and job-proved equipment, matched in work capacity to the horsepower of International Tractors.

Consider the many superior features of International TracTracTors, such as:

- Instant-starting, *full Diesel* engines with advanced design fuel injection that assures complete fuel combustion—
- Ball-bearing and roller-bearing power transmissions that deliver maximum engine horsepower to the tracks—
- Accessible and replaceable clutches, brakes, transmission and other assemblies—

Then you know that International Tractors plus the finest of matched equipment makes the best combination for greater profits through peak performance.

See your International Industrial Power Distributor for all the facts about International Tractors, Power Units and matched equipment now available. There's a size and type of International Tractor exactly suited to your operations.

Industrial Power Division

INTERNATIONAL HARVESTER COMPANY

180 North Michigan Avenue **Chicago 1, Illinois**

Dependable after-sale service is provided all owners of Internationals by distributors and dealer organizations that span the continent and circle the globe. Factory replacement parts and equipment built for use with International Tractors and Power Units are available through these organizations. This assures maximum value and long term benefits for owners, and operators everywhere.

INTERNATIONAL Industrial Power

LIKE A CHAMPION VAULTER...

FORM-SET ROPE IS *relaxed*

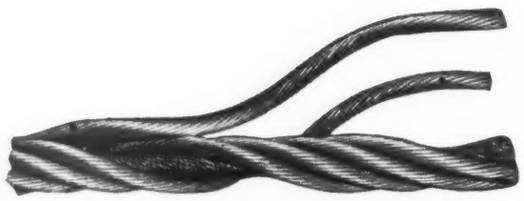
You marvel as his body clears the bar, then falls through space in a graceful arc. Thirteen, fourteen, fifteen feet he drops, yet he lands unhurt . . . because he's *relaxed*.

When handling Form-Set, Bethlehem's preformed rope, you'll notice much of that same relaxed effect. The reason is, of course, that the preforming process shapes each wire and strand to a permanent helix—a shape they retain through the life of the rope. Even though the rope be cut or broken, the wires and strands "stay put." They don't bush out or pop from the core.

This is because the tension is gone—relieved by preforming. The rope is *relaxed*.

What does this bring you? Easier handling, for one thing. More important still, a preformed line is much less subject to bending fatigue. On applications where bending stresses are high, a Form-Set rope has longer life. This means greater economy . . . fewer replacements . . . fewer reriggings.

No matter what rope you want—no matter what grade, type, or size—you can get it with the Form-Set feature. Details are available through the nearest Bethlehem representative.



This is Form-Set rope. The strands have been lifted out by hand. Note how the wires lie smoothly in place. There is no inner tension to force them apart.

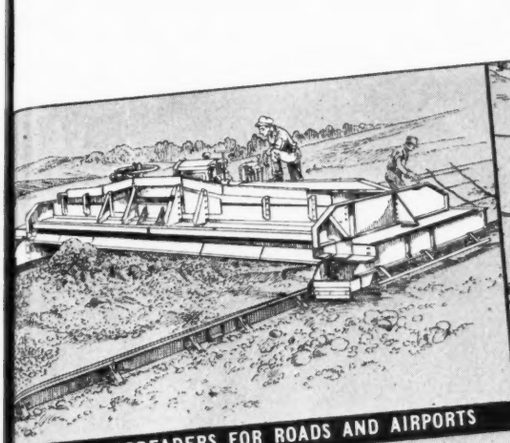
When you think WIRE ROPE . . . think BETHLEHEM

BLUE RIBBON PERFORMANCE MEANS

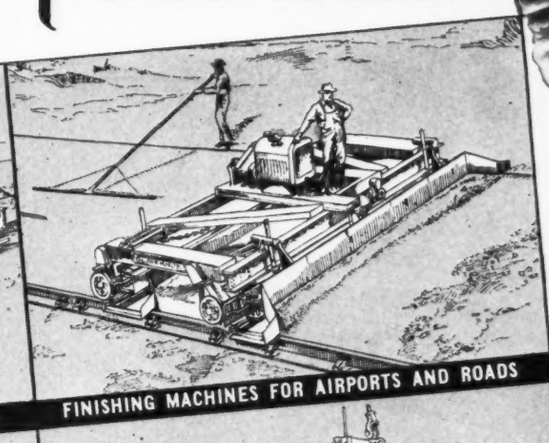
Record Smashing Production

High Quality Performance

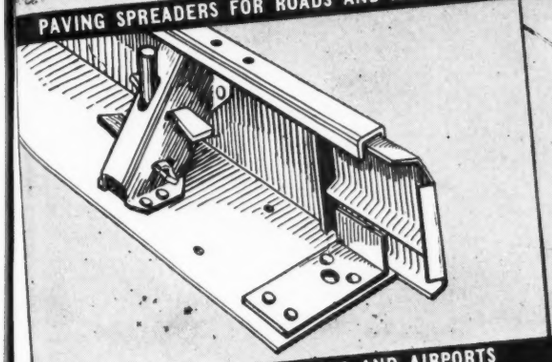
Lower Costs and Greater Earnings



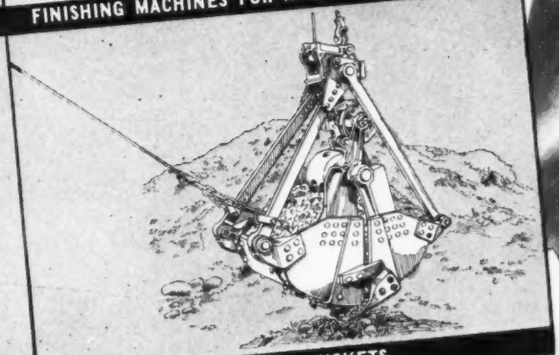
PAVING SPREADERS FOR ROADS AND AIRPORTS



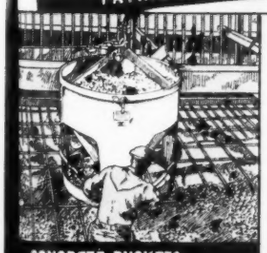
FINISHING MACHINES FOR AIRPORTS AND ROADS



PAVING FORMS FOR ROADS AND AIRPORTS



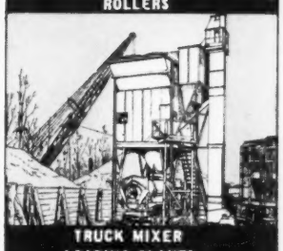
CLAMSHELL BUCKETS



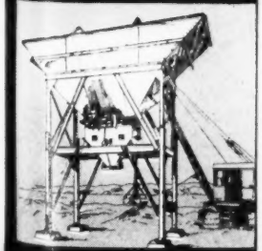
CONCRETE BUCKETS

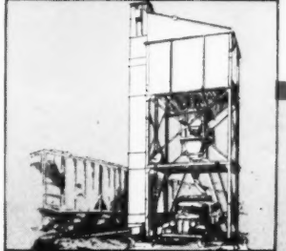
SHEEPSFOOT TAMPING ROLLERS

STEEL STREET FORMS



TRUCK MIXER LOADING PLANTS





Blaw-Knox Construction Equipment offers all three!

Where high speed construction is imperative, either to meet a tough schedule or to make up for unforeseen delays, you can bank on Blaw-Knox Equipment getting the job done quicker.

Where quality of work has to satisfy the requirements of rigid inspection, the Blaw-Knox equipped contractor can depend on his machinery.

Earlier completion and high quality performance through the use of Blaw-Knox Construction Equipment mean cost reduction and larger profits.

The features you are looking for — the factors that mean **Blue Ribbon Performance** — are built into Blaw-Knox batchers and forms, buckets, spreaders and finishers, etc. Experience of our armed forces overseas, and of contractors everywhere, bears this out.

For details — photos — performance data, write for Bulletin No. 2036.

BLAW-KNOX DIVISION of Blaw-Knox Co.
2086 Farmers Bank Bldg. Pittsburgh 22, Pa.

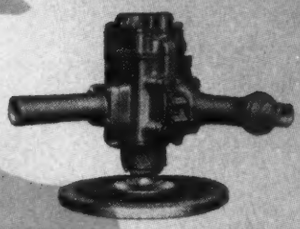
BLAW-KNOX
CONSTRUCTION EQUIPMENT

ALL OVER THE WORLD— YOU

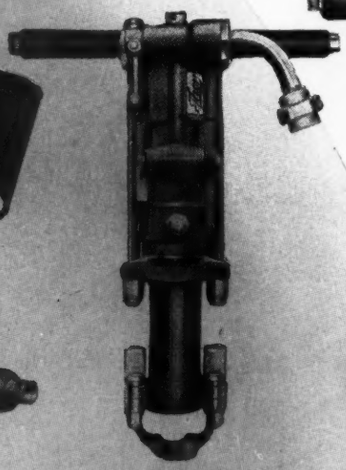
Thor

CONTRACTORS AIR TOOLS

Rotary Grinders



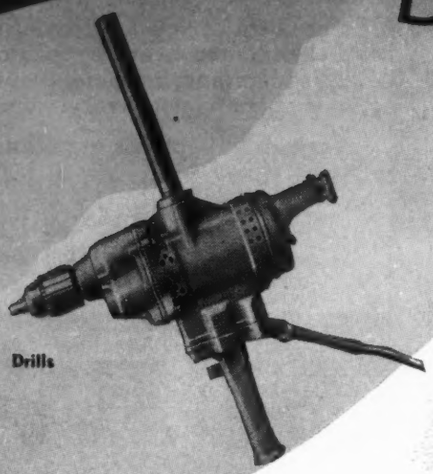
Concrete Sanders



Rock Drills

Paving Breakers

Universal • ELECTRIC TOOLS • High Frequency



Drills

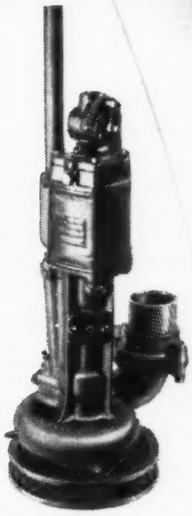
Drill Stands

NAME THE JOB...

will Name the Tools

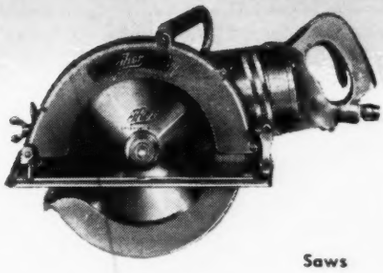
TO DO IT FASTER, BETTER AND AT LOWER COST!

Clay Diggers

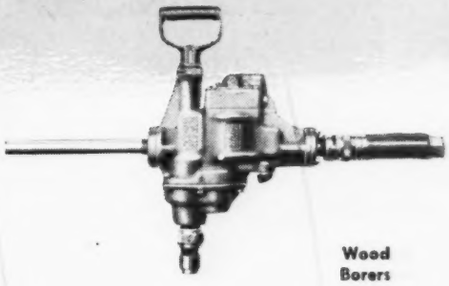


Sump Pumps

Tampers



Saws



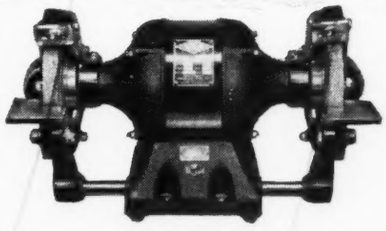
Wood Borers

Riveting Hammers

Chipping Hammers

Nail Drivers

★ ★ ★ ★ ★ ★ ★ ★ ★ ★



Bench Grinders

Leading contractors everywhere specify Thor Portable Power Tools to save time and cut costs. Favorites for more than fifty years, Thor tools have proved again and again their superiority in advanced design and rugged construction. Your nearby Thor Representative can help you choose just the right tools for your work from Thor's *complete* line.

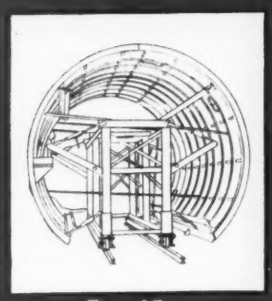
INDEPENDENT PNEUMATIC TOOL COMPANY
600 W. Jackson Boulevard, Chicago 6, Illinois

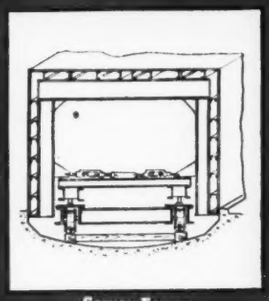
BIRMINGHAM BOSTON BUFFALO CLEVELAND DETROIT LOS ANGELES MILWAUKEE NEW YORK
PHILADELPHIA PITTSBURGH ST. LOUIS SALT LAKE CITY SAN FRANCISCO TORONTO, CANADA LONDON, ENGLAND

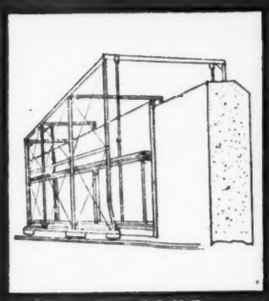
Thor PORTABLE POWER TOOLS

PNEUMATIC TOOLS • UNIVERSAL AND HIGH FREQUENCY ELECTRIC TOOLS • MINING AND CONTRACTORS TOOLS

Atlas Steel Forms For Every Purpose


Tunnel Forms

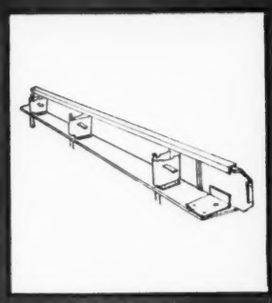

Sewer Forms


Travelling Wall Form

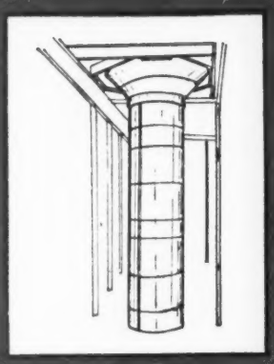
Bridge Pier

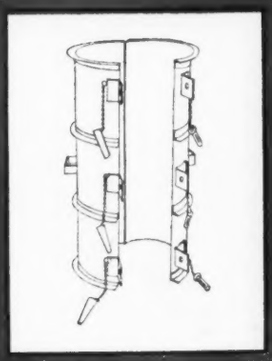
Centering

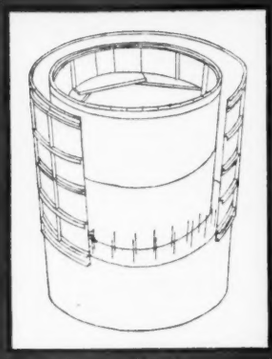
Pan Forms

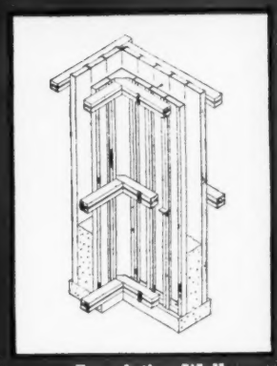

Road Forms

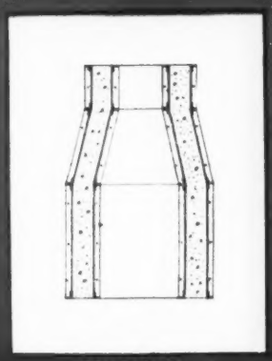
Flat Slab Forms

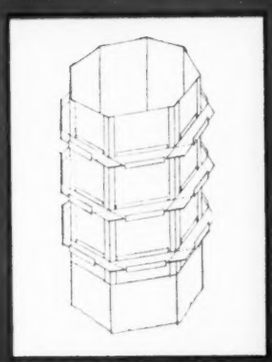

Column Forms


Concrete Pipe

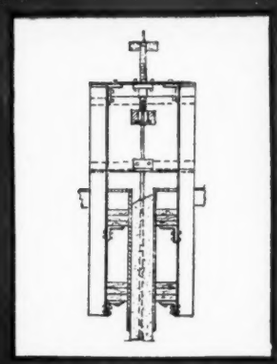

Bins and Caissons


Foundation Wall


Manhole Forms


Octagonal Tapered Columns

Box Caisson


Sliding Forms for Silos, etc.

Send us an outline of your next job and let us show you what Atlas Speed Forms can do for you.

ATLAS STEEL CONSTRUCTION CO.

Write Department RN

IRVINGTON 4, NEW YORK

New York City Sales Office: 43 Cedar Street

Tel.: BOwling Green 9-4030

● Here's the friction material that's setting new records for life and efficiency in the industrial field.

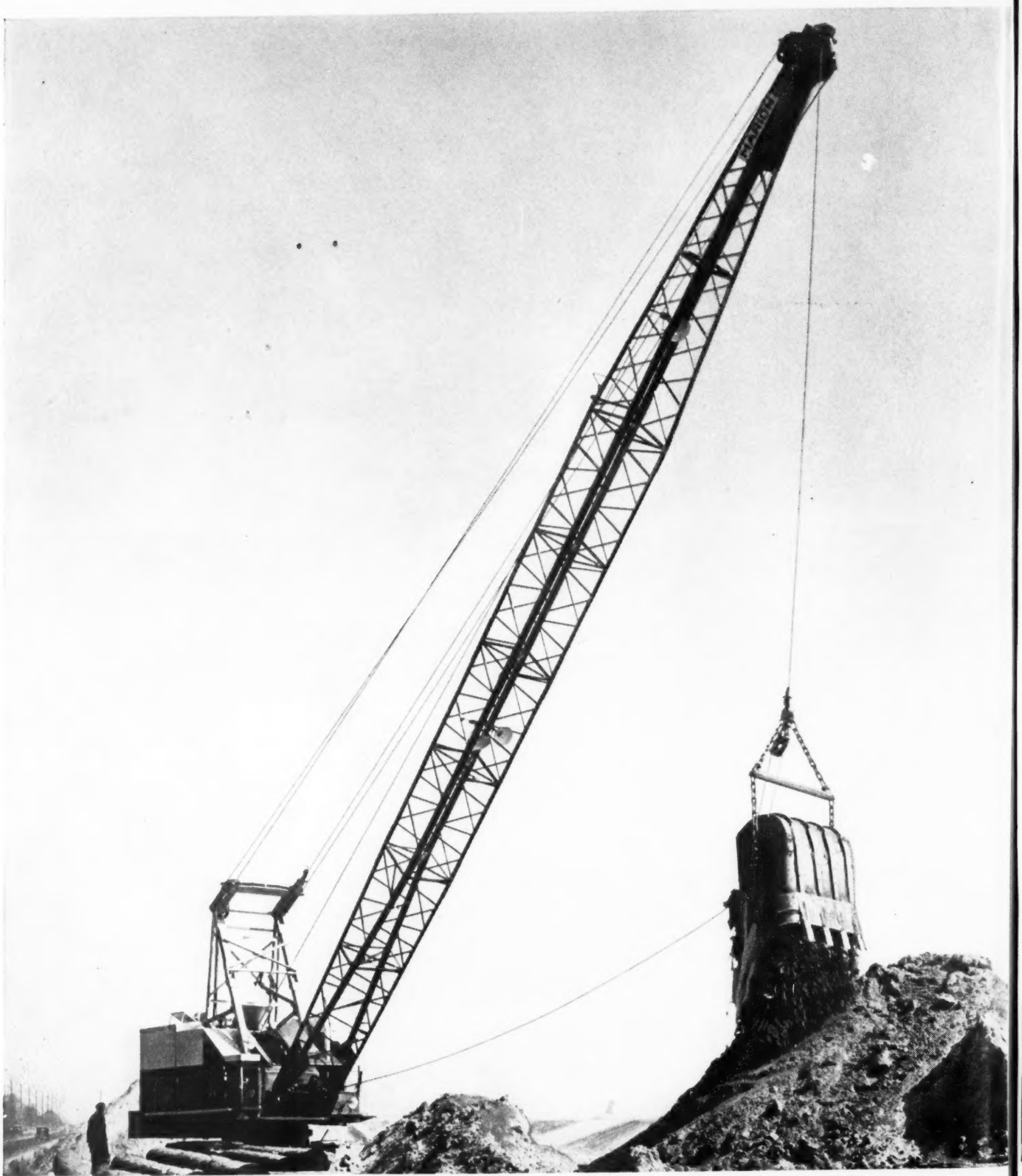
It's Ray-Metl (U. S. Pat. No. 2,369,502)—especially developed for the rugged requirements of heavier equipment. In the hardest type of service, in actual tests, Ray-Metl has averaged 50% more life (in some cases as high as nine times greater life) than the clutch facings it replaced.

Ray-Metl maintains the coefficient of friction—without fade—slipping no longer occurs. Changes in temperature and speeds have little effect. The face is grooved to scavenge out dirt—break the vacuum which retards positive disengagement.

It's more efficient, longer wearing, less costly. See your Raybestos jobber.

THE RAYBESTOS DIVISION of Raybestos-Manhattan, Inc.
Bridgeport, Connecticut

Raybestos
INDUSTRIAL
FRICTION MATERIALS
The single source for all four friction materials—
Full Metallic, Semi-Metallic, Woven and Molded



TUNE IN THE TEXACO STAR THEATRE EVERY SUNDAY NIGHT STARRING JAMES MELTON WITH HIS GUEST, ED WYNN —CBS

TEXACO

REG. T. M.

TEXACO

LONGER LIFE

for wire rope protected

YOUR wire rope will stay stronger longer — give you many extra months of efficient service — if you protect it with *Texaco Crater*. That's because *Crater* provides thoroughly effective lubrication both *inside and out*. It penetrates to the very core and prevents rotting — greatly reduces friction and wear resulting from rapid flexing.

You can depend on *Texaco Crater* to retain all its protective qualities under the most adverse operating conditions. It resists the corrosive effects of the weather. It has been the standby of experienced operators the world over for more than 30 years.

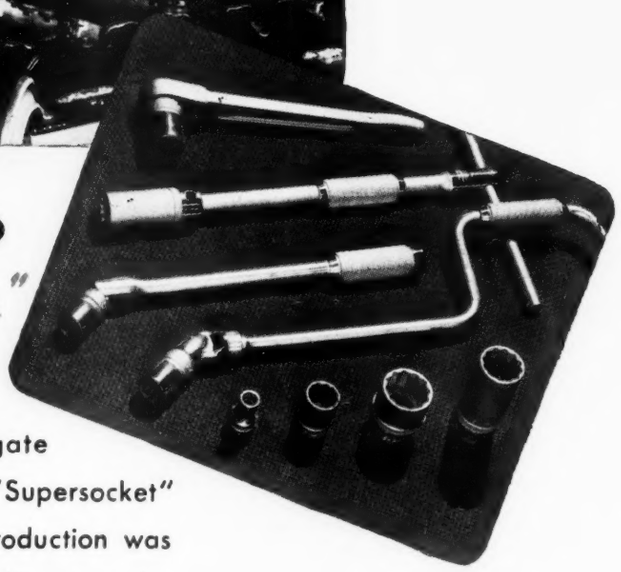
Texaco Crater is also an extremely effective lubricant for open gears. It cushions heavy loads and shocks, quiets noise, materially reduces wear.

For Texaco Products and Lubrication Engineering Service, call the nearest of the more than 2300 Texaco Distributing plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT



ASSEMBLY TIME HALVED WITH *"Supersockets"*

● If you're interested in cutting assembly costs that involve wrench work, investigate Williams "Supersockets." By substituting "Supersocket" Speeders for less efficient wrenches, production was more than doubled on this job. Write for literature describing these time-saving, fatigue-reducing tools.

Williams "Supersockets" are sold by leading Industrial Distributors everywhere.

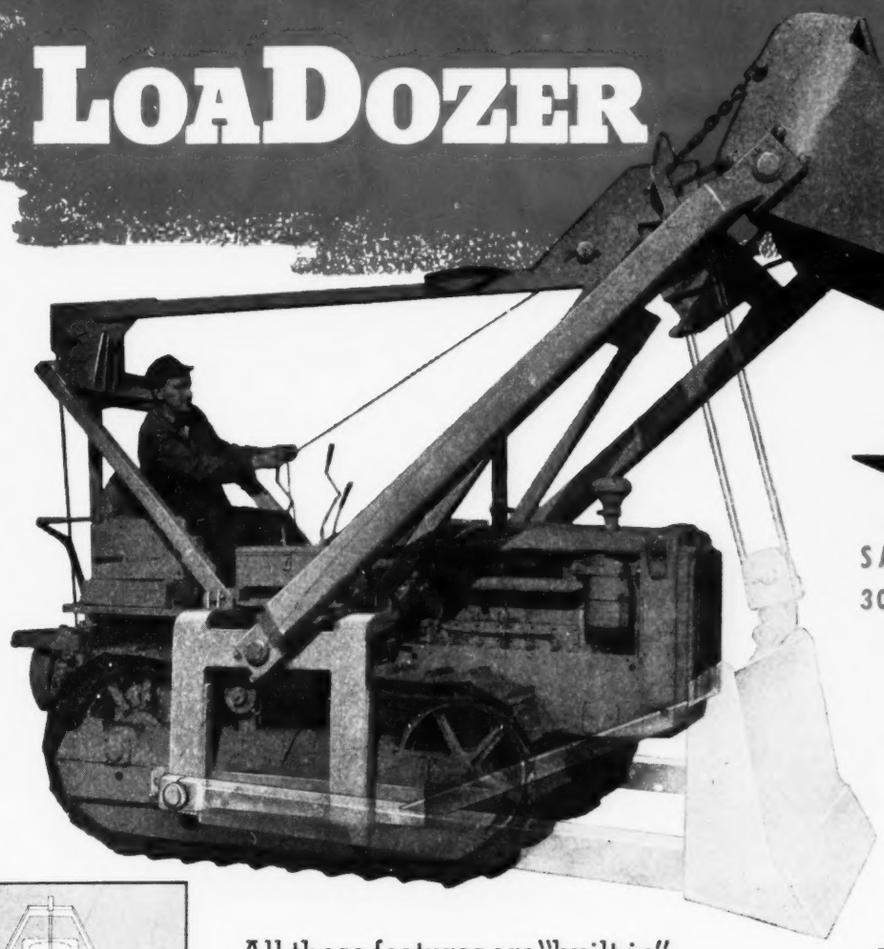
J. H. WILLIAMS & CO., BUFFALO 7, NEW YORK

● Five different patterns of "Supersockets", with drives ranging from ¼" to 1" square, cover every conceivable industrial application. Available individually, and in complete Sets.

WILLIAMS

DROP-FORGINGS AND DROP-FORGED TOOLS

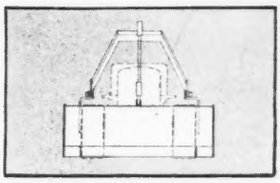
NOW-THE SOUTHWEST LOADOZER

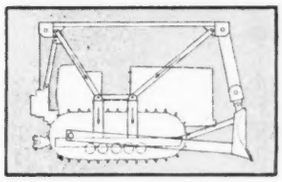


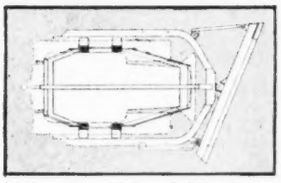
All this

SAVES ONE TRACTOR
30 MINUTE CHANGE-OVER
EASY OPERATION

Balance
Economy
Ruggedness
Speed
Versatility







"Over Center Track Mounted" design gives perfect balance

ANOTHER EXAMPLE OF *Southwest's* LEADERSHIP

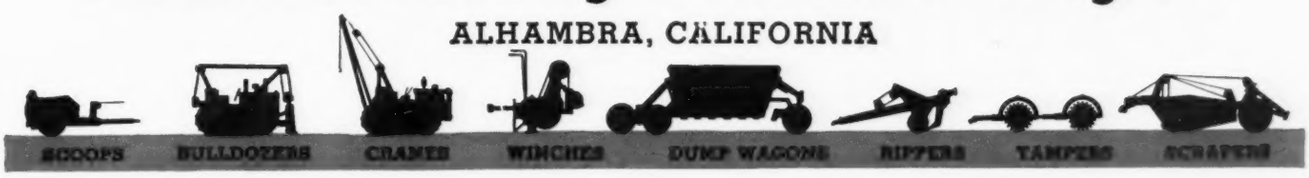
All these features are "built-in" qualities of the new SOUTHWEST "LOADOZER"—Extra values that mean greater efficiency and economy in Loader and Bulldozer operations. Remember—you SAVE ONE TRACTOR—it takes only 30 MINUTES TO CHANGE OVER this combination Loader-Bulldozer unit.

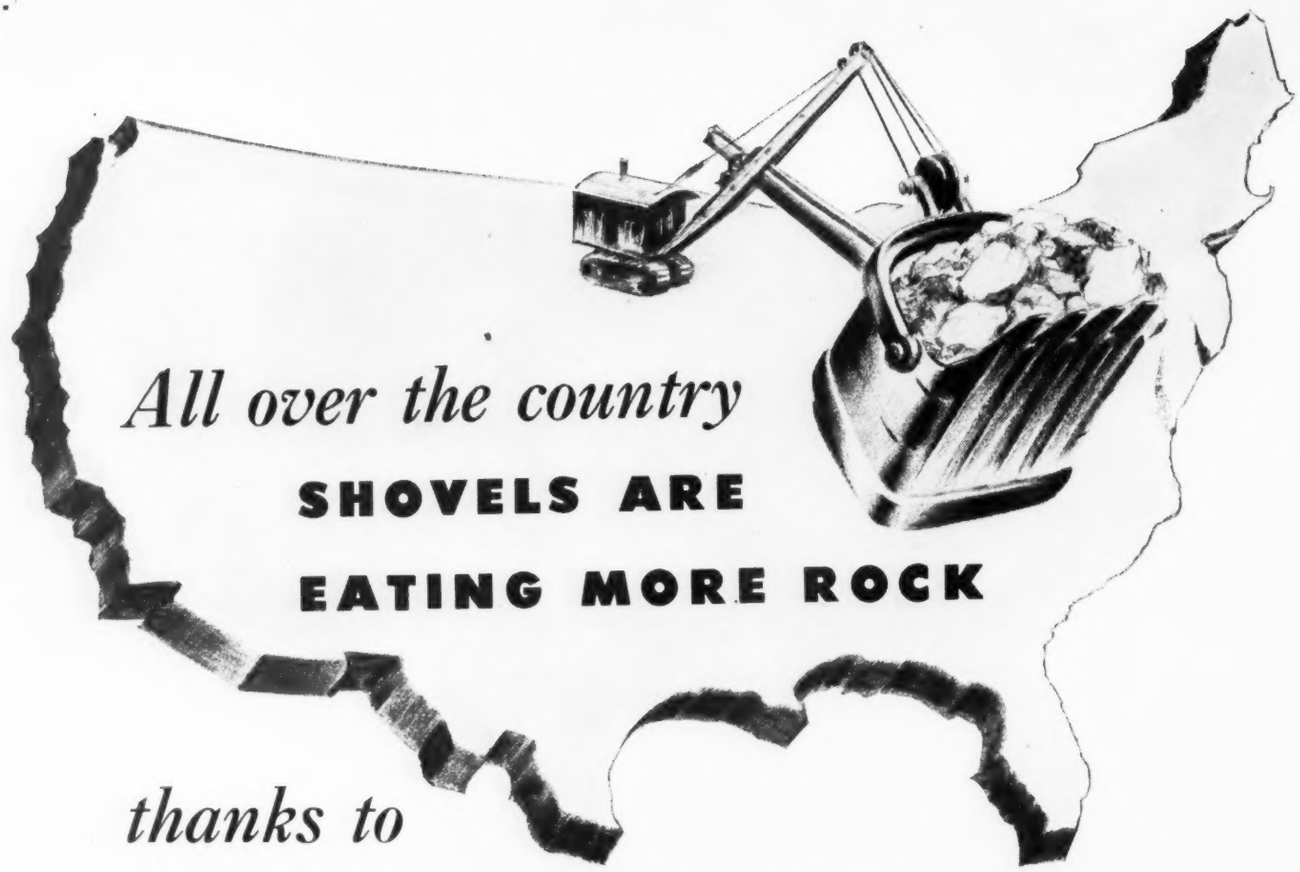
- Built for all four makes of track type tractors.
- See your equipment dealer about the complete line of SOUTHWEST CONSTRUCTION EQUIPMENT.
- For complete specifications on this Loader-Bulldozer combination unit—WRITE FOR BULLETIN CM-11.

CONSTRUCTION MACHINERY DIVISION

Southwest Welding & Manufacturing Co.

ALHAMBRA, CALIFORNIA





All over the country

SHOVELS ARE EATING MORE ROCK

thanks to

ATLAS ROCKMASTER

All over the country—on all kinds of construction blasting work, under all kinds of conditions—shovels are working faster, eating up more rock than ever before. The blasting is much quieter, too, and complaints about vibration are almost nil.

Why? Because Atlas Rockmaster, the first really important blasting development since the war, is on the job.

The Rockmaster Blasting System which incidentally also gives you the extra safety of Manasite Detonators, was originally designed by Atlas to increase fragmentation. And day after day it is doing exactly that—often by 30 percent and more. At the same time reports from superintendents show that *Rockmaster often trebles the number of holes shot in a single blast without vibration complaints.*

Would you like to be shown what the Rockmaster Blasting System can do for you? Visit a construction job where Rockmaster is used. Or better yet, call in the Atlas representative and let him add his knowledge to yours to save time, trouble and money.

Remember—You Get the Extra Safety of Manasite, Too!

PROOF OF THE PUDDING IS IN THE EATING!

KANSAS—"*We made two shots of 25 holes—12 holes the first time, and 13 the second. When shots were fired, we heard only a faint report from the first, and none from the second.*"

ILLINOIS—"*Fragmentation 15% better than previous blasts—and no complaints from the neighbors regarding vibration.*"

NEW JERSEY—"*Rockmaster at least 40-50% better than previous shots . . . obtained better breakage and noticeable reduction in vibration.*"

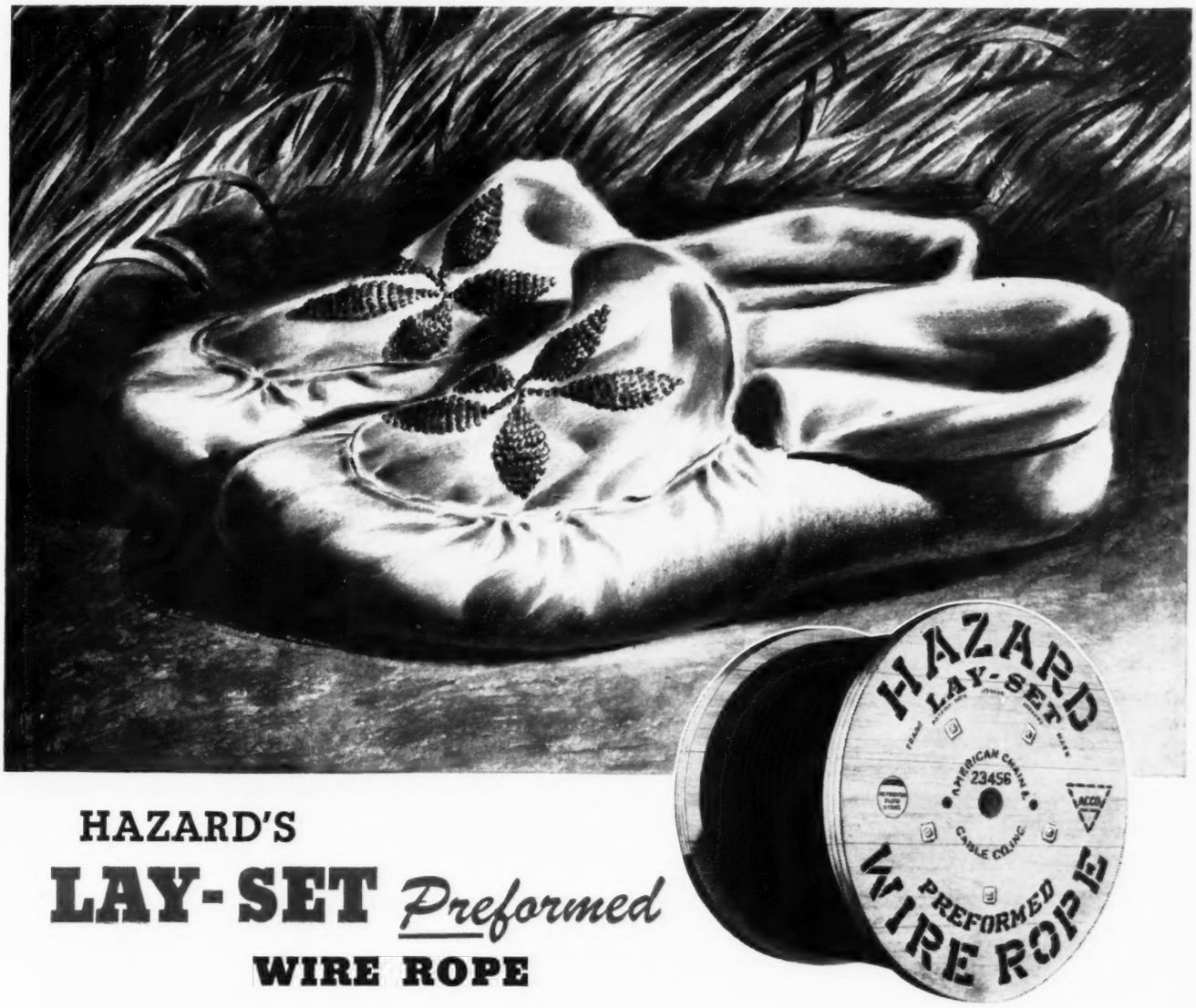
ATLAS EXPLOSIVES

"Everything for Blasting"

CHEMICALS ATLAS EXPLOSIVES

ATLAS POWDER COMPANY, Wilmington 99, Del. • *Offices in principal cities* • *Cable Address*—Atpowco

As free of stress as well-worn moccasins



HAZARD'S
LAY-SET *Preformed*
WIRE ROPE

You get true flexibility—limberness—willingness to bend—a wire rope that is easy to handle—when you put Hazard LAY-SET Preformed on your machine.

That is because every wire is preformed. It is the preforming process that frees the steel from internal torsional strains and pent-up stresses. It endows the rope with amazing resistance to bending fatigue, makes it spool better on drums, makes it easier to handle—reeve faster. All these characteristics add up to longer life, fewer machine shutdowns for rope replacement, steadier machine production, safer working conditions, greater dollar profit.

For your next line, order Hazard LAY-SET Preformed. Put it on your own machine, keep your own service records. Test it in your own way. Make it prove itself. It will.

ACCO

Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Tacoma, Seattle, Bridgeport, Conn.

HAZARD WIRE ROPE DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

In Business for Your Safety

The tire that really gives

TRACTION-

Firestone GROUND GRIP

GROUND GRIP

WHEN other tires quit — gum-up and spin — the Firestone Ground Grip keeps driving — maintains maximum traction in loose fill or over unimproved haul roads. Specifically designed for the drive wheels of earth-moving trucks and equipment, this special purpose tire has proved itself to be the greatest traction tire ever developed for off-the-highway work. The connected triple-braced tread bars pack down loose earth as they dig into the ground. Flexing action of the continuous tread design forces dirt from between the tread bars — keeps them clean, ready for the next traction bite.

Firestone Ground Grips on the drive wheels of your off-the-highway equipment out-pull any other tire ever built, cut your operating time — and costs — to the minimum.

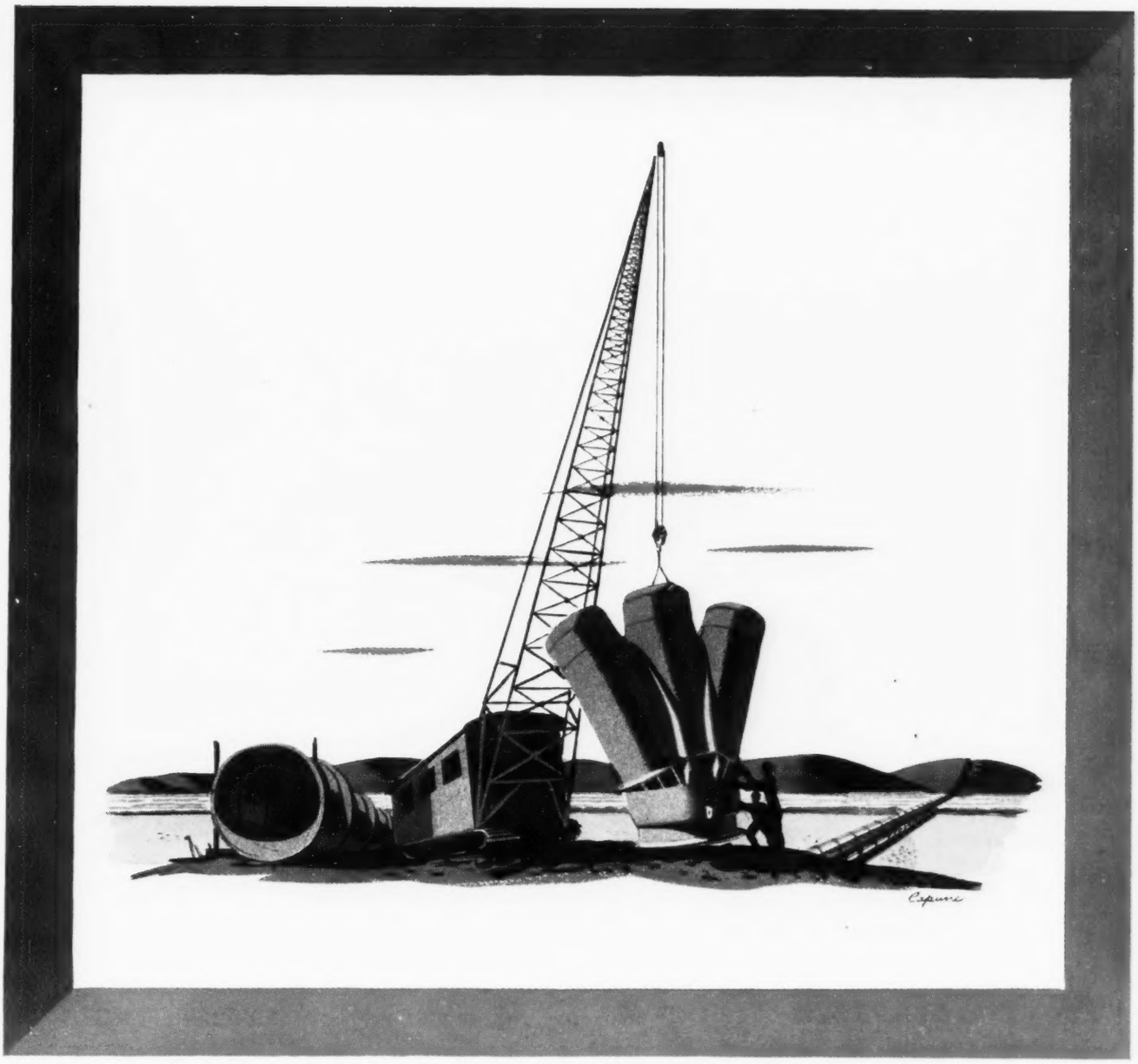
For the best in music, listen to the "Voice of Firestone" every Monday evening over NBC network.

ALL NON-SKID
Designed to give maximum flotation to free-rolling wheels on drawn earth-moving scrapers, wagons and buggies.

ROCK GRIP EXCAVATOR
Delivers extra traction plus stamina in toughest trucking operations, quarrying, logging, construction work, ore and coal strip mining.

Copyright, 1946, The Firestone Tire & Rubber Co.

Firestone OFF-THE-HIGHWAY TIRES



PIPELINES OF STEEL

With its purchase of Western Pipe & Steel Company, Consolidated Steel Corporation is better equipped than ever to fill your needs for steel pipe as well as other forms of fabrication and erection.

If your current or future plans call for precision craftsmanship in steel, Consolidated's versatile engineering experience and expanded facilities stand ready to carry out your orders *immediately*.

Consolidated Steel

FABRICATORS · ENGINEERS · CRAFTSMEN

CONSOLIDATED STEEL CORP., LTD., LOS ANGELES, SAN FRANCISCO, BAKERSFIELD AND FRESNO, CALIF. · PHOENIX, ARIZ. · ORANGE, TEX.

LEADERS IN THE WEST AND SOUTH

REFRIGERATOR CARS

STEEL BUILDINGS

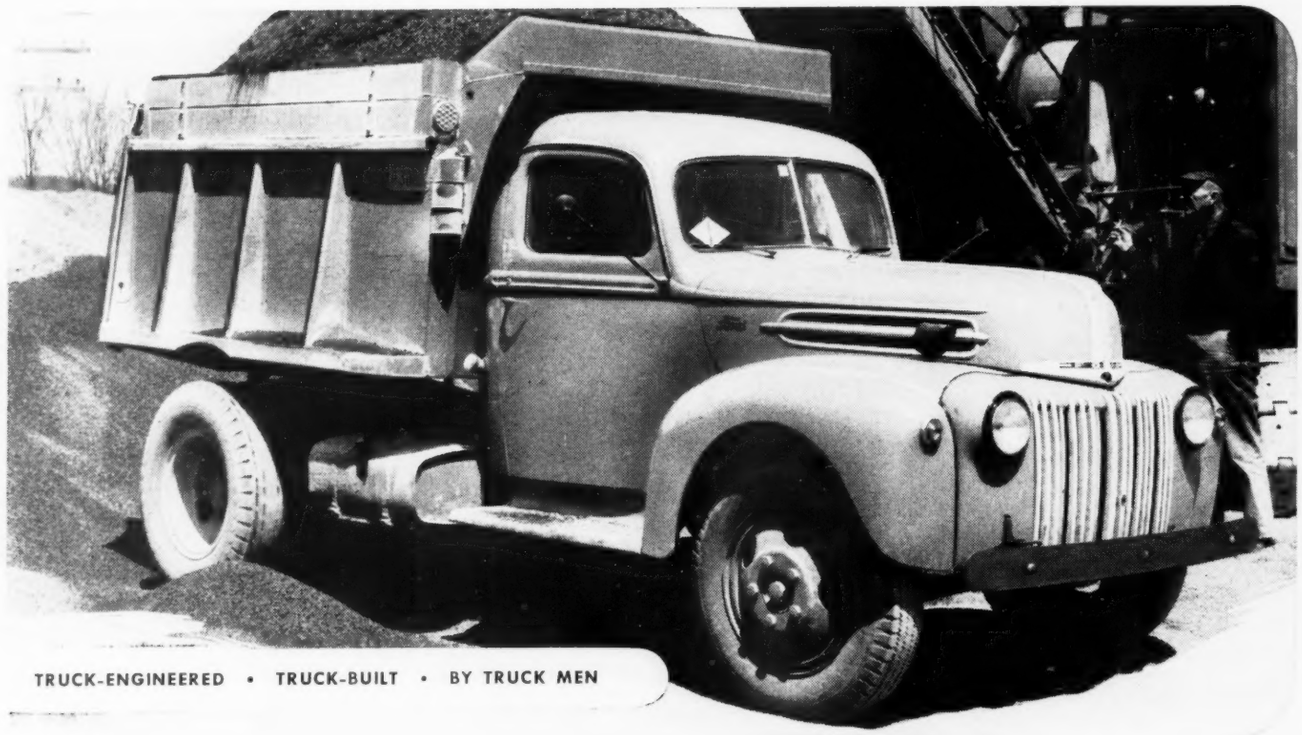
SPECIAL STRUCTURES
Palomar Telescope Dome

DAM TRESTLES

PRESSURE VESSELS

DRUM GATES

Better Trucks for YOUR Business!



TRUCK-ENGINEERED • TRUCK-BUILT • BY TRUCK MEN

"FORD TRUCKS HAVE BEEN MY CHOICE SINCE 1931"

"This will give you an idea of what this 1942 Ford is doing," wrote Operator A. W. Avery, of Utica, New York, some months ago. *"Although you rate it at 1½ tons, I often carry much greater loads with this 5-yard body with side-boards. This has been its daily job in all kinds of weather!*

"I've used Fords since 1931—that's many years of satisfied service. I feel I've been lucky in having a Ford through these years."

Emergency pressures, which have been on the building trades, have made overloading almost a national custom. No truck engineer likes to see overloading, of course. But it has certainly proved one big fact for thousands of Ford Truck operators: Ford Truck endurance is a tremendous asset when the going gets really tough. Then Ford axle and clutch engineering prove their soundness; Ford frame strength and spring capacity prove their extra value; and Ford power speeds jobs to a finish.

There's a new Ford dump truck chassis in production now. Heard about it? Ask your Ford Dealer.

Ford

FORD ADVANCED ENGINEERING!

THE FAMOUS V-8 ENGINE, for toughest service, now 100 HP, with NEW steel-cored Silvaloy rod bearings for trebled endurance • NEW Flightlight aluminum alloy 4-ring pistons for added oil economy • Tougher, rust-proofed valve springs • NEW moisture-sealed distributor • NEW coolant-saving radiator closure • Auto-balanced carburetion for still more thrifty power • Servicing simplified still further. And the rugged, thrifty 90 HP Ford six-cylinder engine, for stop-and-go jobs, with many important advancements, available in all except C.O.E. chassis.

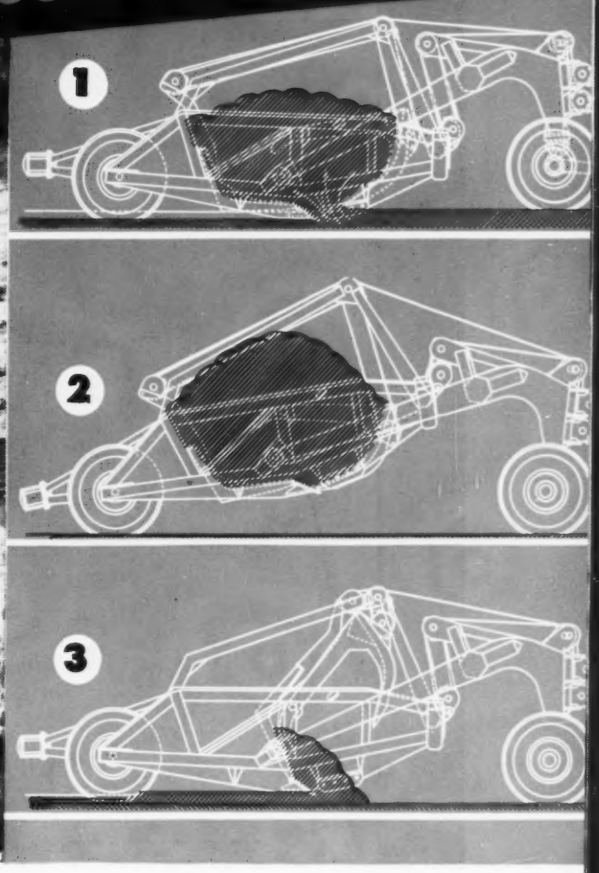
Ford Truck rear axles—world-famous for load-lugging—provide generous reserve capacity • Light duty chassis have sturdy ¾-floating axle with triple-roller-bearing, straddle-mounted pinion; full-floating axles in all other chassis • 2-speed axle at extra cost in heavy duty units • Improved 4-speed transmission at extra cost in light duty chassis, standard in all others.

FORD TRUCKS

MORE FORD TRUCKS ON THE ROAD • ON MORE JOBS • FOR MORE GOOD REASONS

Down-to-Earth Engineering

GAR WOOD Earth Moving Equipment Features
Practical Design and Sound Construction



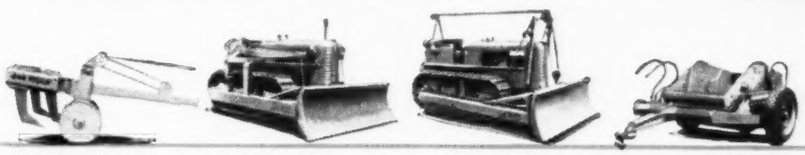
GAR WOOD 4-Wheel Cable Scrapers are *all scraper*, well engineered, honestly built of high quality materials, developed and proved over a period of many years—scrapers that *hold together* and get big yardage jobs done at consistently good speed with an absolute minimum of down time. Some of the many outstanding engineering features, as well as the rugged simplicity of the mechanism, are shown in the three drawings above:

1. LOADING: The self-loading is by positive digging to depths down to 12″. "Boiling" action of dirt loads bowl and patented apron evenly by reason of proper angle of the cutting edge. Positive digging action is assured in all types of materials by proper location of draft point.

2. CARRYING: This position provides extremely high clearance of cutting edge, essential in traveling over uneven ground and in discharging sticky materials. Proper weight distribution with exceptionally low center of gravity assures stability—provides for maximum tire life.

3. DUMPING AND SPREADING: The first portion of the load dumps automatically when the apron is raised. The remainder is forced out by *positive rolling ejection.* Note extremely large apron opening to facilitate this ejection of all types of materials. Cutting edge remains stationary throughout cycle, providing for even, *accurate control* of the spread by the heavy duty *Gar Wood Cable Control Unit.*

Contact your Allis-Chalmers dealer. He will be glad to show you Gar Wood earth moving equipment and arrange for you to see on-the-job performance in your locality.



Heavy Duty Rippers | Hydraulic Dozecaster | Cable Dozecaster | 2-Wheel Hydraulic Scrapers

OTHER GAR WOOD PRODUCTS: HOISTS AND BODIES • TANKS • WINCHES AND CRANES • HEATING EQUIPMENT • MOTOR BOATS

GAR WOOD ROAD MACHINERY
WITH ALLIS-CHALMERS DIESEL POWER

Sold Through
ALLIS-CHALMERS
Dealers Everywhere

ROAD MACHINERY DIVISION
GAR WOOD INDUSTRIES, INC.
DETROIT 11, MICHIGAN

GENERAL ELECTRIC

Announces . . .

NEW

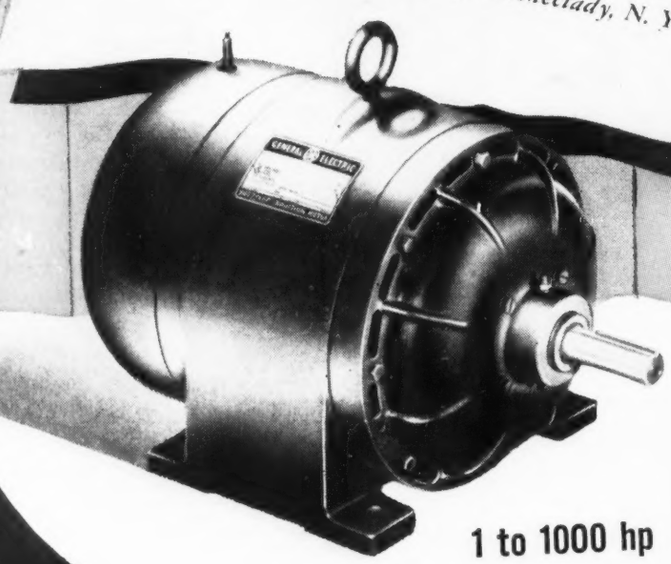
Totally Enclosed TRI CLAD MOTORS

In 1940, G.E. introduced the Tri-Clad open motor—with emphasis on the feature that industry wanted most in a motor, *protection.* Since then, more Tri-Clads have gone into service than any other integral-horsepower motor.

Today, we are ready with a new line of Tri-Clad motors—*totally enclosed, fan-cooled motors*—built on Tri-Clad design principles in both standard and explosion-proof types.

We believe that these are industry's most dependable motors. They are designed specifically for use in many adverse atmospheres—in iron dust, outdoors, in hazardous areas, and chemical atmospheres. Their scope of application is as wide as the field of industrial motor use. Safe-guarded against most sources of motor damage, their longer life and lower maintenance will make them economical motors for use on almost every job. *General Electric Company, Schenectady, N. Y.*

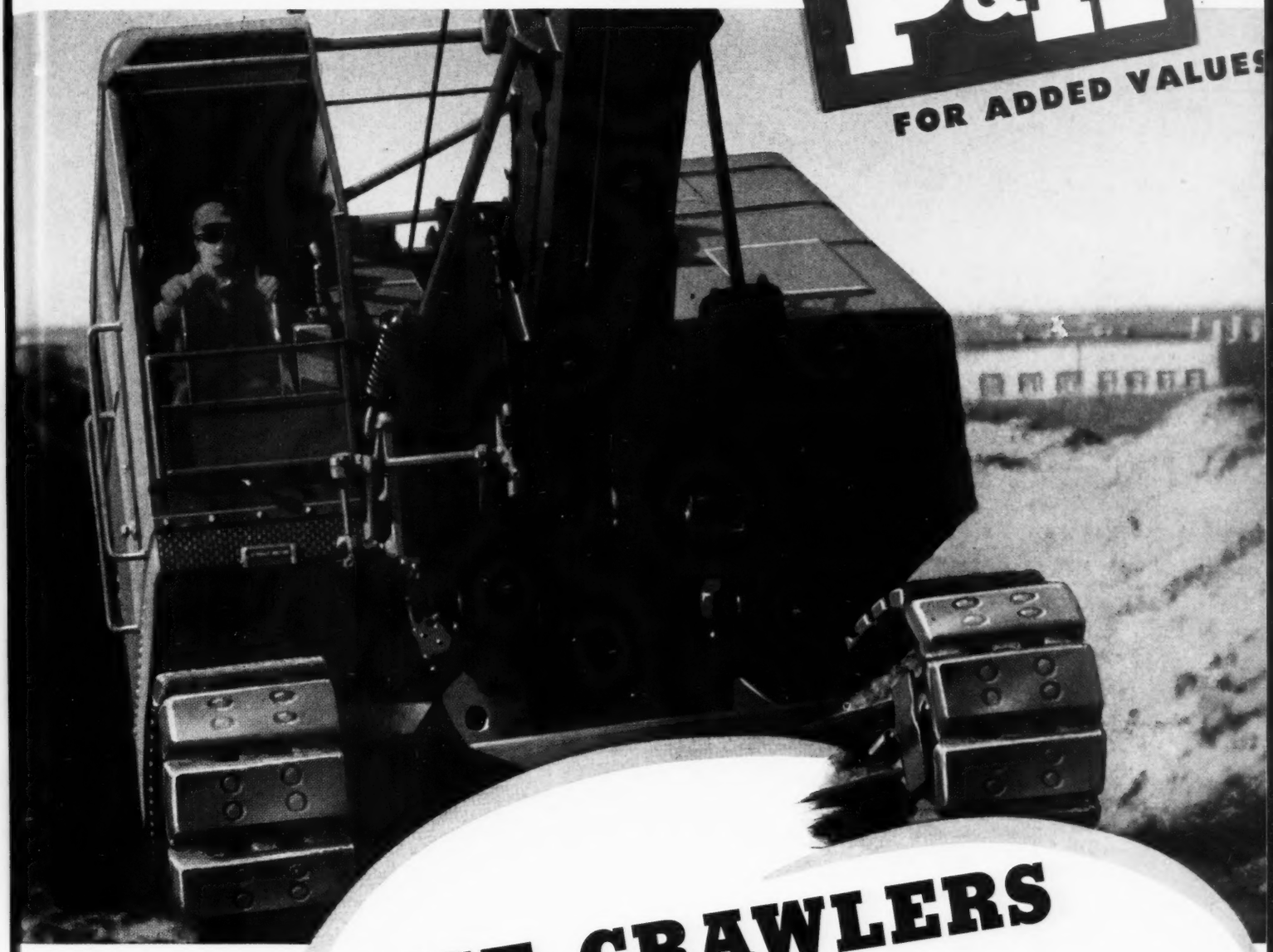
750-260-8030



1 to 1000 hp

COMPLETE ENCLOSURE FOR PROTECTION AGAINST DIRT, DUST, AND WEATHER

LOOK TO **P&H** FOR ADDED VALUES



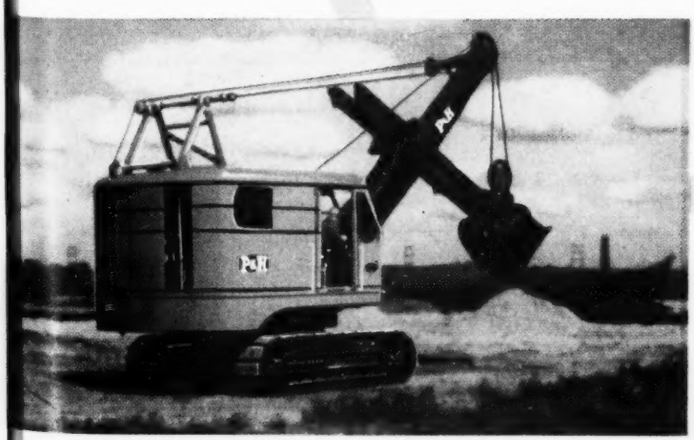
GREATEST CRAWLERS

ever put on an excavator!

• How much could you save each year if you could eliminate all your crawler troubles? How much waste time? How many repair bills? How much money?

For years, traction troubles have been a major source of lay-up and expense for excavator owners. Because traction mechanism is so important, P&H has gone the limit to provide the most practical and efficient assembly ever put on an excavator — *true tractor type crawlers!*

Their design and construction, proved in millions of miles of travel, brings you many new advantages—in smoother travel, easier maneuvering, easier steering, less lost time, lower maintenance. It's a P&H added value that will save you money every year—for the life of the machine.



P&H's husky crawler frames and axles are built of rolled alloy steels and welded integrally with the carbody. This rigid, "weave-proof" assembly withstands twists, strains and shocks from all directions. No bolts to wear loose, no holes to weaken the joints.

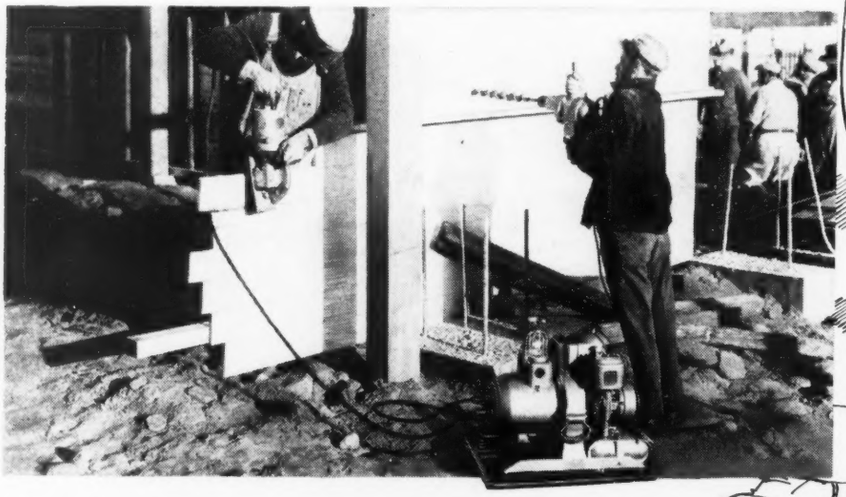
P&H EXCAVATORS

4494 W. National Ave.
Milwaukee 14, Wisconsin

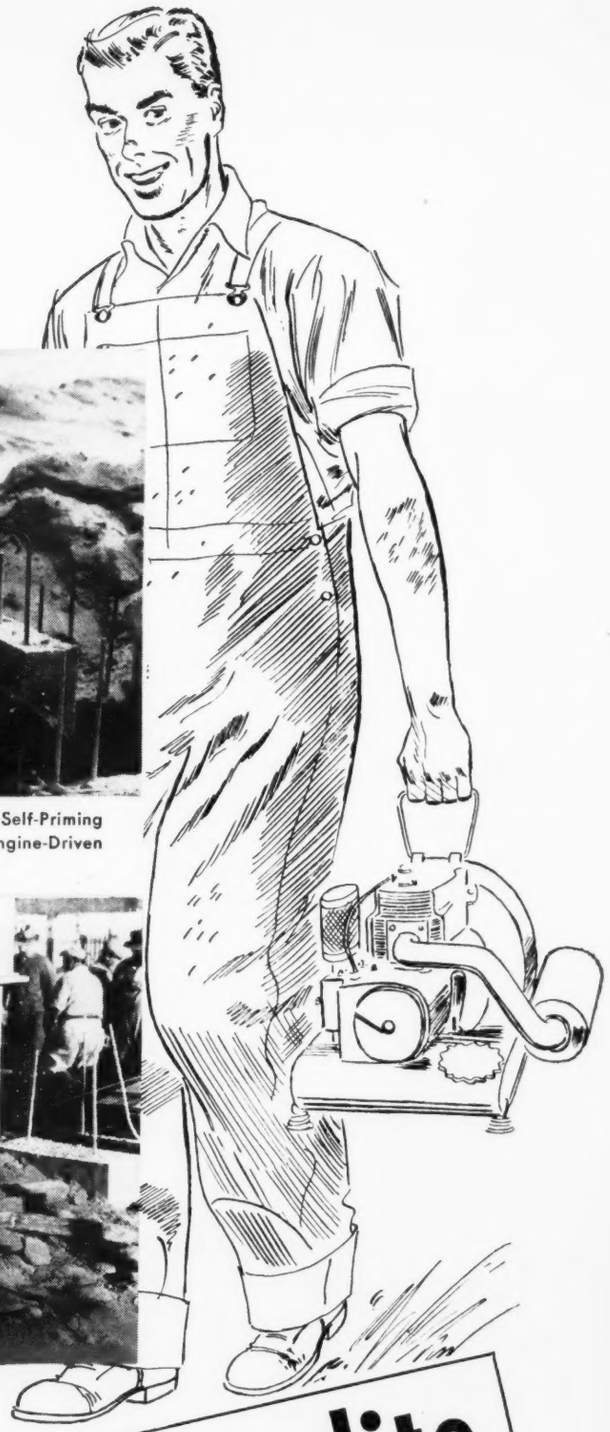
HARNISCHFEGER CORPORATION

EXCAVATORS • ELECTRIC CRANES • ARC WELDERS P&H HOISTS • WELDING ELECTRODES • MOTORS

Before Buying
A Portable Pump or Generator...



Top picture shows high capacity of Homelite Portable Gasoline-Driven Self-Priming Centrifugal Pump. Bottom picture shows Homelite Portable Gasoline-Engine-Driven Generator operating electric drill and saw.



See What It Does ON THE JOB

Sure, we want you to write for our new bulletins... bulletins filled with the latest information on Homelite Portable Gasoline-Engine-Driven Pumps and Generators. But more than that, we want you to see these units in operation on the job... *your* job... any place, any time. After all, that's the only way to know how well a Homelite Pump pumps or how many tools and floodlights you can put into cost-saving operation with a handy Homelite Portable Generator. That is why we have so many Homelite men in the field . . . men who are trained and equipped to go out on your job, understand it thoroughly and show how Homelite equipment should work to your advantage.

So when writing for our new bulletins . . . L 501 on Pumps and L 406 on Generators specify that you also want a demonstration.

Homelite
CORPORATION
PORT CHESTER, NEW YORK
Portable Pumps, Generators, Blowers

BRANCH OFFICES

Albany, N.Y. Chicago, Ill. Hartford, Conn. Orlando, Fla.
Atlanta, Ga. Cincinnati, O. Kansas City, Mo. Philadelphia, Pa.
Baltimore, Md. Cleveland, O. Los Angeles, Cal. St. Louis, Mo.
Boston, Mass. Dallas, Tex. New York, N.Y. San Francisco, Cal.
Buffalo, N.Y. Detroit, Mich. No. Arlington, N.J. Seattle, Wash.

DEALERS

Pittsburgh, Pa. Denver, Col. Minneapolis, Minn.
C.K Koontz Equipt. Co. George F. Hastings The Midwest Equipt. Co.
Canadian Representative: Terry Machinery Company Ltd.

Canvas "Tent"

foils fire . . . defies weather

Let it rain . . . or snow—a canvas "tent" over this demolition and replacement job permits uninterrupted work despite the elements.

But *ordinary* canvas is a fire hazard. A hot rivet, a welder's torch or an overturned salamander might touch off a disastrous blaze.

That's why FIRE CHIEF Finished Hooperwood Canvas is first choice for construction work. Any fire is out before it starts because FIRE CHIEF will not support combustion.

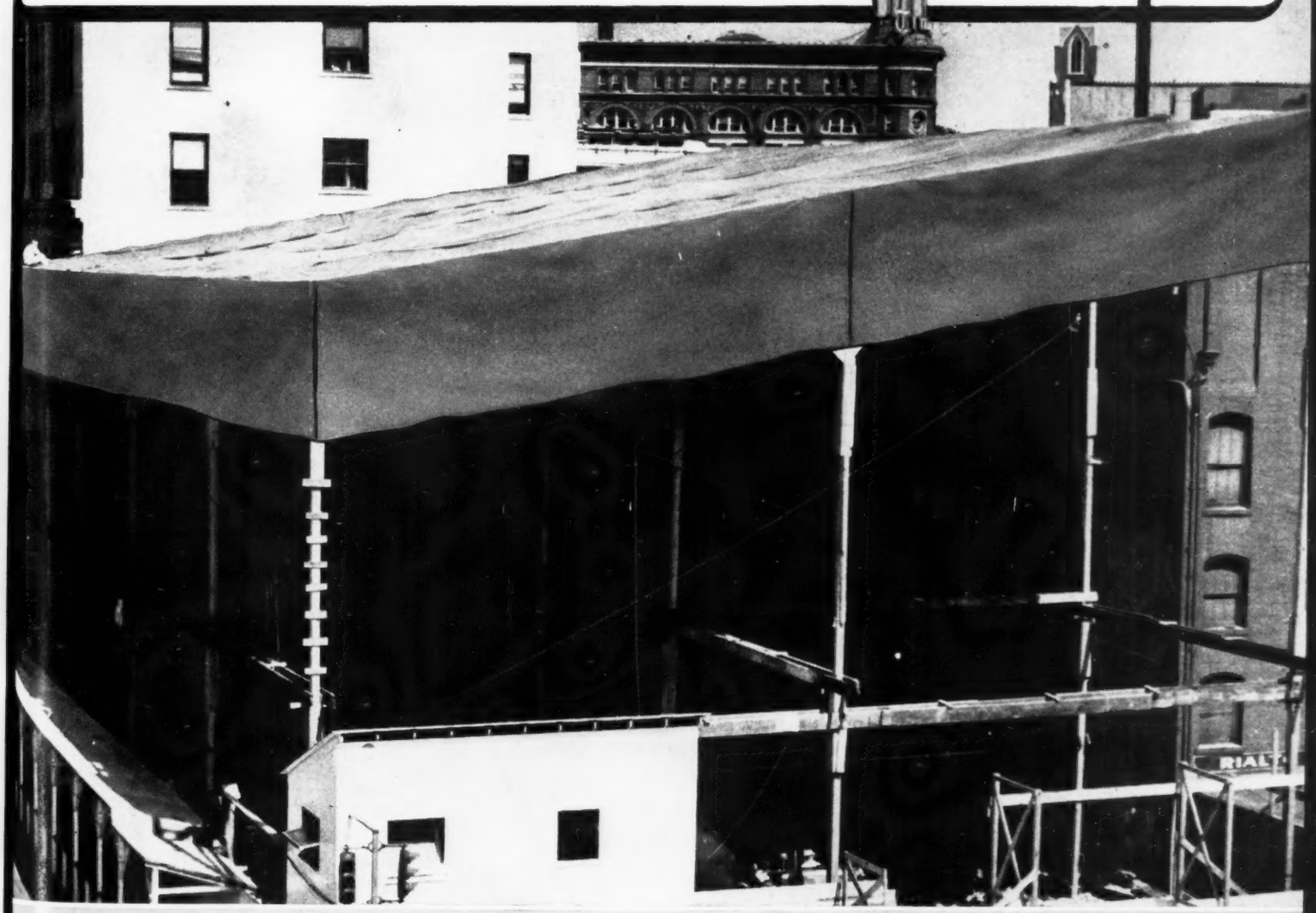
There are other advantages, too. FIRE CHIEF is also water, weather, wear and mildew resistant. It is flexible year round, and the FIRE CHIEF finish is permanent. Outlasts other canvas many times.

It's good business, and maximum protection, to insist on FIRE CHIEF for all tarpaulins and windbreaks.

WM. E. HOOPER & SONS CO.

New York **PHILADELPHIA** Chicago

Mills: WOODBURY, BALTIMORE, MD.



Fire-Chief Finished (PATENTED)

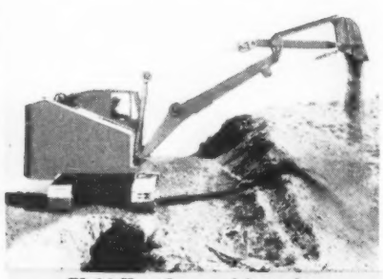
HOOPERWOOD COTTON DUCK

Thew · LORAIN

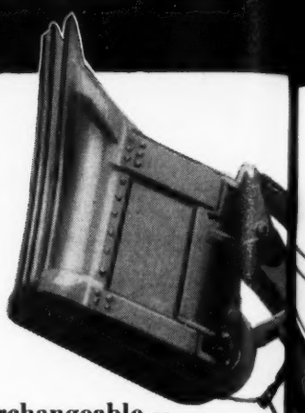
TL-20 Shovel on 6x6 Moto-Crane Mounting.

TL-20 Dragline on 2-speed chain drive crawler.

TL-20 Self-Propelled Crane, 4 or 6 wheels.



TL-20 Hoe. Gooseneck boom for maximum digging.



AND WE DO MEAN NEW! The TL-20 is the first really new "postwar" shovel and crane — not a delayed prewar unit, not a war-built unit — but new and up-to-the-minute from mounting to boom head.

True, all basic functions are the same. It hoists, swings, travels and crowds. But the *way* it does these jobs is entirely new — in engineering design, in power, speed and output.

A COMPLETE PACKAGE — NO EXTRAS! Each TL-20 is a complete package. All essential accessories — such as starter, generator, lights — are built into the standard unit. It's not a stripped-down unit; no "extras" to buy. It has the largest number of interchangeable parts ever built into a machine.

UNIT ASSEMBLY THROUGHOUT! Each major component — clutch shaft, engine, hoist shaft, cab, crawler propelling mechanism — can be removed and interchanged as a complete unit. The 5 clutches which control all machine operations have identical working parts and are also interchangeable — a vital factor in easy, low-cost service.

YOUR CHOICE OF 10 MOUNTINGS — 5 BOOMS! 2-Speed Chain Drive Crawler and 9 Rubber-Tire Mountings (Moto-Crane and Self-Propelled types) on 4 or 6-wheel units with or without front wheel drive. 5 Interchangeable Boom assemblies for shovel, crane, clamshell, dragline or hoe operation.

There are dozens of other time-saving, work-saving, money-saving advantages with the TL-20 that make it a real "Contractors' Machine" — a machine easy to understand, easy to service and maintain. See your nearest Thew-Lorain distributor about the *postwar* TL-20 — the newest thing in the ½ yd. class.

THE THEW SHOVEL COMPANY
LORAIN, OHIO

's FREE...
nd full of facts!

The complete, illustrated story on the new TL-20 is contained in this bulletin . . . Ask your local Thew-Lorain distributor for a copy or write The Thew Shovel Co., Lorain, Ohio.

TL-20

AVAILABLE WITH 5 INTERCHANGEABLE B

does it again!

NEW { In ideas / In design / In features / In performance

The 20 Lorain

MODERN FEATURES GALORE

- Anti-Friction Bearings
- Oil-Enclosed Cut Gears
- One piece, All-Welded Turntable Bed
- Hook Rollers
- Drop Forged Treads
- "Full Circle" Steering
- Positive Independent Cable Shovel Crowd

E BOOMS AND CHOICE OF 10 MOUNTINGS

On this aggregate screening and storage system, No. 661 Diamond Conveyor Chain and Nos. 433 and 447 Roller Chains are standard equipment.

Barber-Greene Coal Loader—a one-man coal handling plant. The Diamond Chains used are Nos. 470 and 434.

Whether It's Coal, Dirt, Snow, Aggregate

DIAMOND

Chain-Equipped Conveyors Speed the Handling

Conveying equipment such as the Barber-Greene machinery illustrated, is designed to speed up the handling of materials—to save time—to save handling costs.

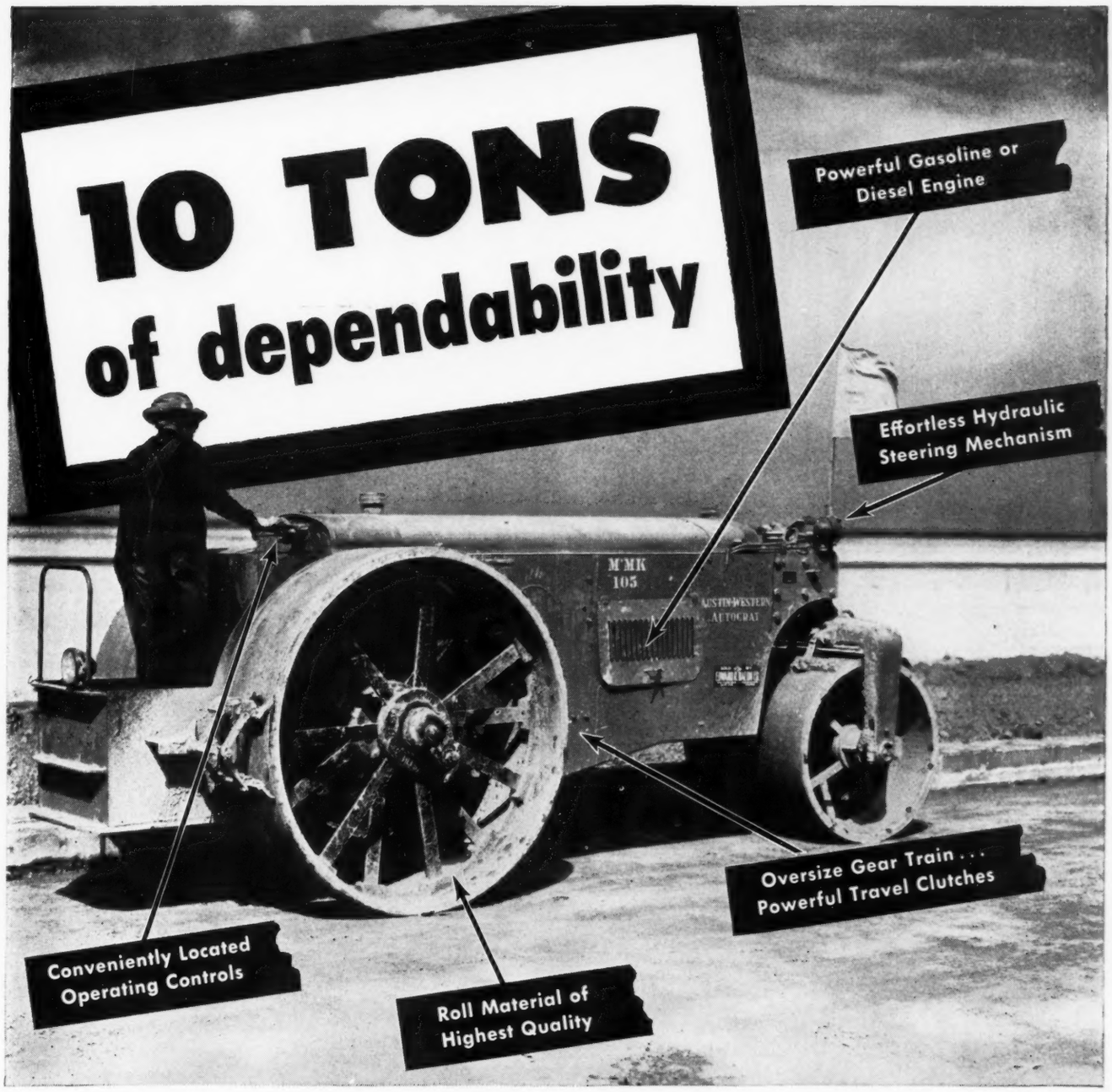
Since roller chains perform vital functions on such equipment, it is important that they be carefully selected for each particular job. Steady, unfailing operation must be assured.

Leading manufacturers, basing their selections of roller chain on engineering ability and field performance, regularly employ DIAMOND Roller Chains. At Diamond, every effort in engineering, production skill, and constantly modernized manufacturing facilities, is expended to assure still better service to users of Diamond Roller Chains. DIAMOND CHAIN COMPANY, Inc., Dept. 418, 402 Kentucky Avenue, Indianapolis 7, Indiana. Offices and Distributors in All Principal Cities.

This Barber-Greene Ditcher digs and removes soil at high speed. Diamond No. 478 and double No. 470 Roller Chains used.

Four sizes of Diamond Roller Chains (Nos. 433, 434, 470 and 478) are used on this Snow-Loader.

DIAMOND ROLLER CHAINS


10 TONS
of dependability
Powerful Gasoline or Diesel Engine
Effortless Hydraulic Steering Mechanism
Oversize Gear Train . . . Powerful Travel Clutches
Conveniently Located Operating Controls
Roll Material of Highest Quality

Thousands of owners and operators will tell you "Austin-Western Rollers stay on the job day after day, and month after month, with less time lost for mechanical adjustments, maintenance and repairs". That's DEPENDABILITY! Add to it the precision job of rolling that results from such features as Proper Weight Distribution, Vibrationless Power Units and Smooth Acting Clutches, and you have an unbeatable combination. Why take less in a Road Roller?

AUSTIN-WESTERN COMPANY, AURORA, ILLINOIS, U. S. A.

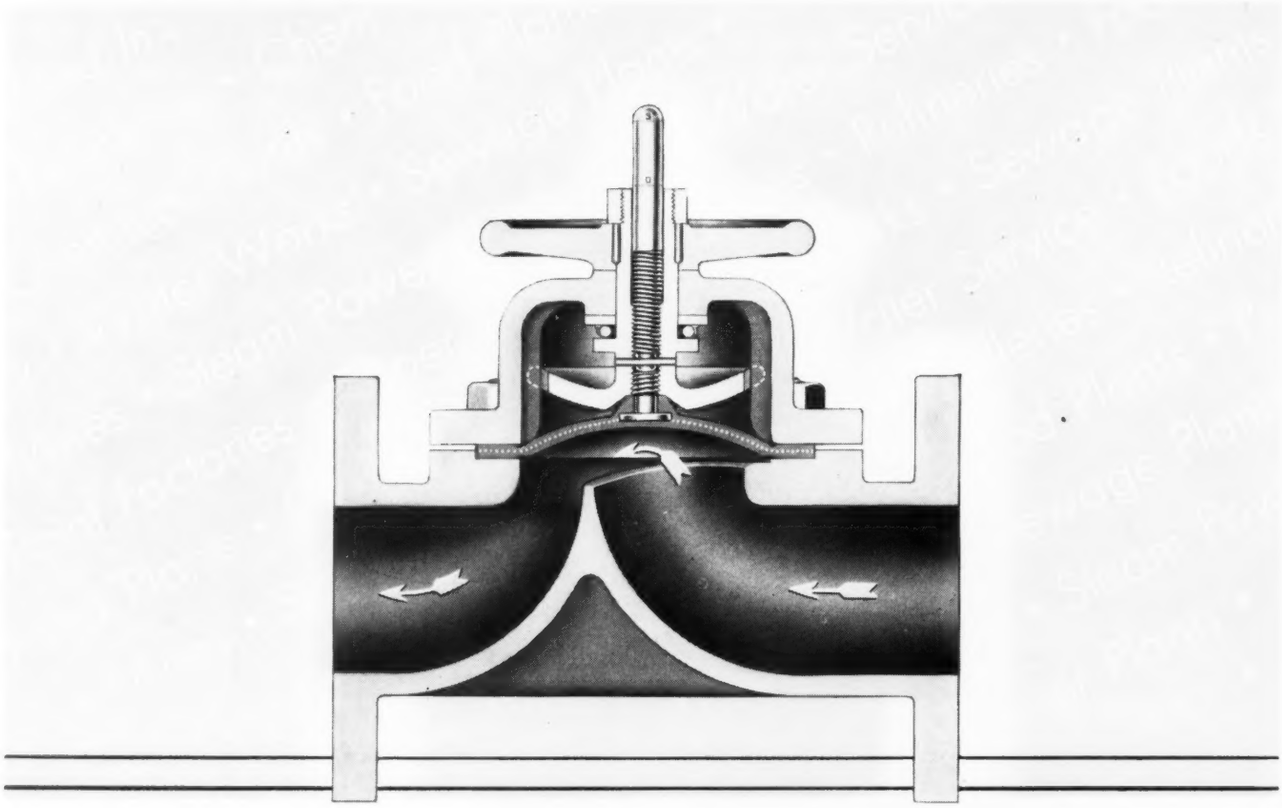
BUILDERS OF ROAD MACHINERY

Austin Western

SINCE 1859

NOW...A VALVE THAT LAUGHS AT CORROSIVES AND ABRASIVES

...and cannot LEAK, "FREEZE" or JAM!



McAlear No. M-1455 Diaphragm Valve

★ Pressures, Vacuum to 150 lbs. ★ Temperatures to 150° F. ★ Sizes ½" to 6".

- Applicable for air and water lines and special services.
- Used in *every* industry that handles corrosive or abrasive fluids.
- Diaphragm separates mechanism *completely* from fluids handled.
- Shut-off positive—even with solids trapped on seat.
- Closure not dependent on metal-to-metal contact.
- Cannot leak in any position.
- Requires no re-packing.
- Requires no re-seating.
- Diaphragm replaceable with valve in line.
- Special pressure operated types for automatic or pilot control.

FOR BULLETIN giving complete data, write McAlear Manufacturing Company, Automatic Control Division of Climax Industries, 1935 S. Western Ave., Chicago 8, Illinois.

CLIMAX INDUSTRIES

McALEAR

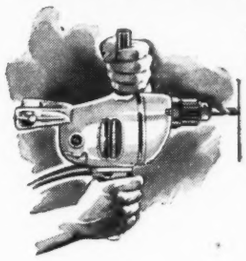
PRESSURE FLOW LIQUID LEVEL TEMPERATURE

controls

for STEAM, WATER, AIR, OIL and GAS

Black & Decker Drills
• • Designed for Double Duty

Portable Tools or Powerful Drill Presses—They're Worth Waiting for!



That's right! The same Black & Decker Electric Drill that's so handy to carry from job to job also clamps quickly into a Black & Decker Drill Stand to make a powerful drill press and is just as quickly removed for portable use. And Black & Decker Drills of all sizes are designed and powered for this double-duty service.

Exceptionally heavy demand for this kind of performance still keeps the supply of these Drills and Drill Stands scarce . . . but it makes sense to wait a little longer for tools that have so much to offer!

Black & Decker Drill Stands provide the leverage for a steady, smooth feed on more precise work . . . as well as for tremendous pressure when needed. And you free one hand to guide the work. Moreover, Black & Decker Portable Electric Drills have what it takes to keep going under that pressure, on any job, up to their rated capacity.

Your nearby Black & Decker Distributor will be glad to give you information on these Drills, Drill Stands and other accessories that will increase the value of your present drills. For your free copy of our complete catalog, write to: The Black & Decker Mfg. Co., 659 Pennsylvania Ave., Towson 4, Maryland.

LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker

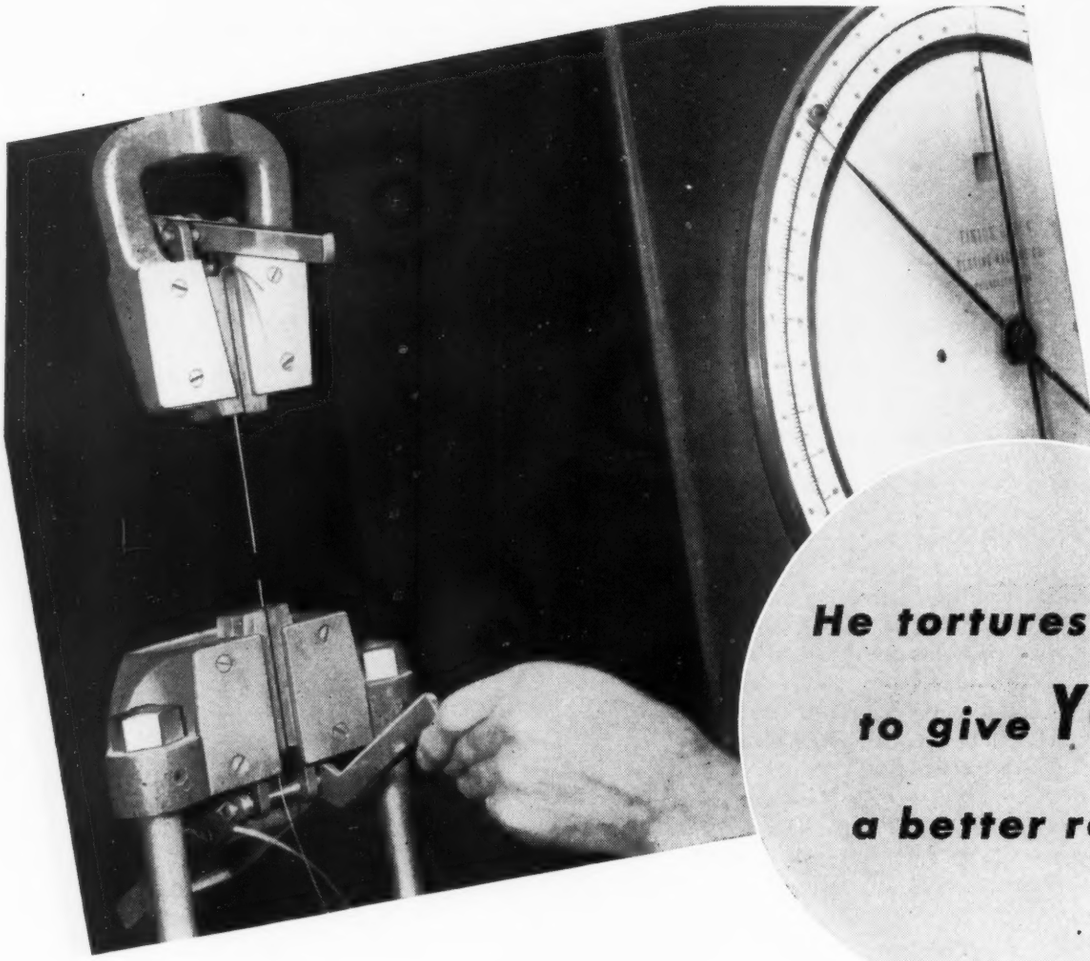
PORTABLE ELECTRIC TOOLS

Black & Decker ½" Standard Drill in No. 40 Drill Stand

BENCH GRINDERS

ELECTRIC SANDERS

ELECTRIC SAWS



He tortures wire to give YOU a better rope

This Macwhyte laboratory technician is working in *your* interest. He gives the strength test to samples from each end of every coil of wire we make. Each sample is stretched to the breaking point. If it passes the test, the coil is tagged OK and used for Macwhyte Wire Rope. If not up to standard, the wire is rejected.

To make sure Macwhyte Rope will give you maximum service, the finished wire is also given a torsion or twist test to check its stamina. Granular structure is analyzed by a microscopic camera. Wire samples are rotated in an arc by a special machine that checks their ability to withstand fatigue.

Strict metallurgical control is another reason you can always depend on Macwhyte Wire Rope for long, economical life.

Make MACWHYTE your headquarters for WIRE ROPE and SLINGS

Macwhyte Wire Rope Catalog, G-15. 170 pages. Lists Macwhyte's full line, gives complete manufacturing story. Ask any Macwhyte representative or write Macwhyte Company.

MACWHYTE COMPANY

Wire Rope Manufacturers

2941 ***Fourteenth Avenue, Kenosha, Wisconsin***

Mill Depots: New York · Pittsburgh · Chicago · Minneapolis · Fort Worth
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Distributors throughout the U. S. A. and other countries

★ ★ ★ ★

MACWHYTE PREformed and Non-PREformed Wire Ropes—Internally Lubricated . . . MONARCH WHYTE STRAND Wire Rope . . . Special Traction Elevator Rope . . . Braided Wire Rope Slings . . . Aircraft Cables, Assemblies and Tie-Rods . . . Stainless Steel Wire Rope, Monel Metal Wire Rope, Galvanized Wire Rope.

MACWHYTE COMPANY 50th Year 1896 - 1946

NO. 659

Keep in the Bidding!

WITH YOUR

LINK-BELT SPEEDER

QUICK, EASY CONVERTIBILITY KEEPS THIS MACHINE BUSY *More of the Time!*

The standard Link-Belt Speeder "Shovel-crane", readily converted from one front-end attachment to another, will do most of the earth-moving or material-handling operations required on the average job. The contractor with a Link-Belt Speeder can thus bid on many kinds of jobs, and as a result, keeps busy more of the time. The Link-Belt Speeder "Shovel-crane" does more work — more kinds of work, *more of the time!*

For Prompt, Efficient, Convenient Sales and Service:
There is a Link-Belt Speeder Distributor Located Near You

LET'S MAKE AMERICA THE LAND OF **GOOD ROADS!**

10,206

LINK-BELT SPEEDER

Builders of the Most Complete Line of
SHOVELS-CRANES-DRAGLINES

LINK-BELT SPEEDER CORPORATION, 301 W. PERSHING ROAD, CHICAGO 9, ILL.
A DIVISION OF LINK-BELT COMPANY

THIS SERVICE FITS

ANY SET-UP

—ANY JOB!

SOCONY-VACUUM OIL COMPANY, INC., and Affiliates: Magnolia Petroleum Company, General Petroleum Corporation

No matter how or where you operate this Complete Lubrication Service can save you time all down the line!

Are equipment failures raising Cain with your work schedules . . . tying up *other* machines?

No matter how varied your equipment — we can help you minimize breakdowns . . . keep machines at peak efficiency—with exactly the right oil or grease for every application!

Having trouble finding tested maintenance schedules that fit your individual needs?

Our Representative studies your set-up — supplies you with the *right* time-saving schedules — helps your men adapt them to your special requirements to simplify maintenance.

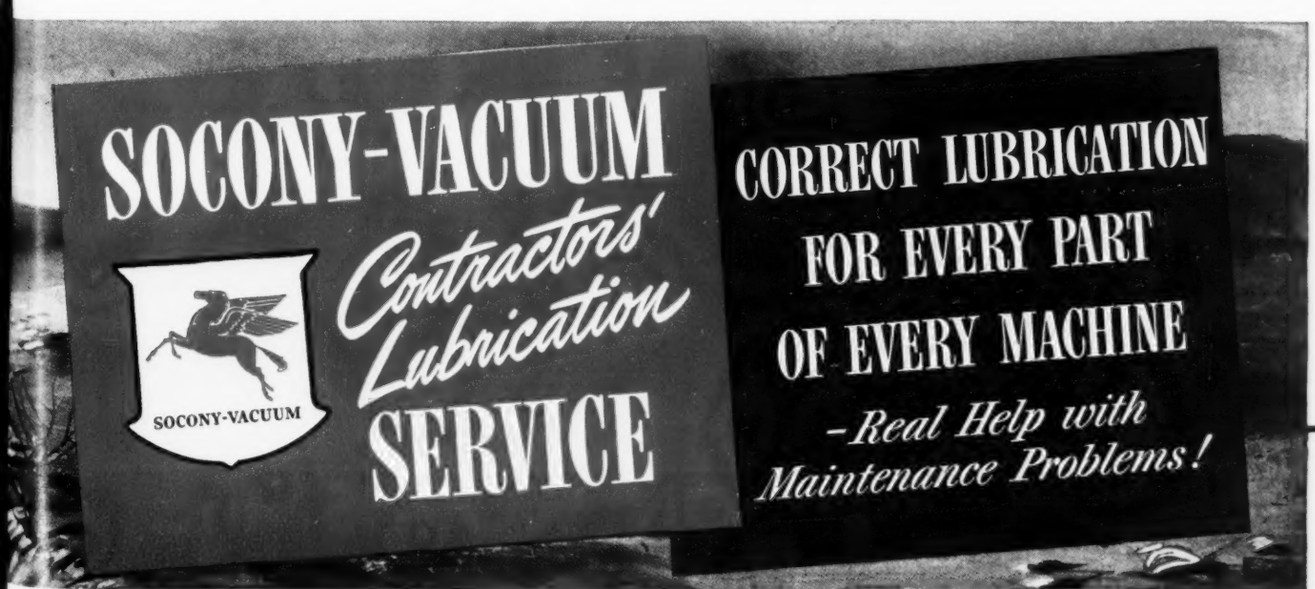
Are too-frequent interruptions for refueling and lubrication slowing up work-progress?

Wherever you're located, we'll arrange on-the-job deliveries. Result: Fewer field interruptions . . . fewer inventory problems.

Are "problem" machines causing repeated delays, turning out less and less work?

When the cause is lubrication, our Representative can give you practical help — or, when necessary, call in qualified engineering aid.

Why Be Satisfied Merely With "Gas and Oil" When You Can Get Complete Service!



Tune in "Information Please"—Monday Evenings, 9:30 E. D. T.—NBC

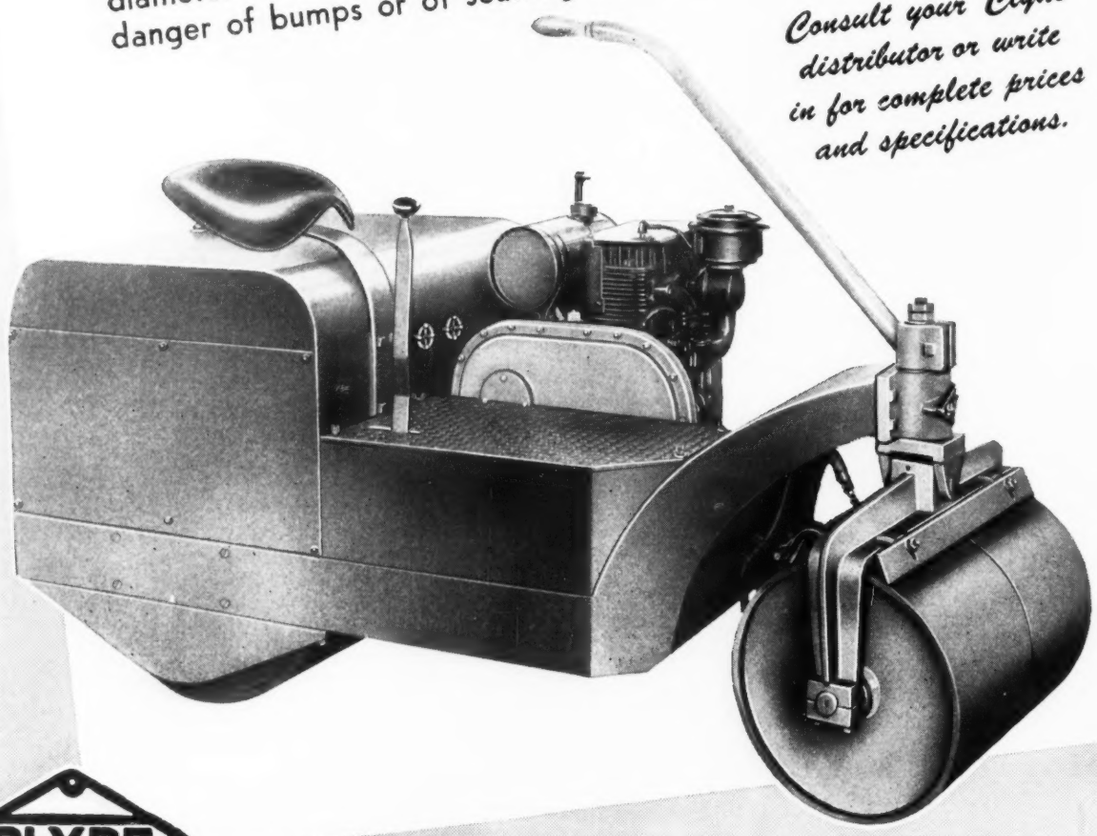
CLYDE ONE TON ROLLERS

The new Clyde one ton roller is carefully engineered to meet the demand for a roller that is especially easy to maneuver, simple to operate, economical to run and maintain.

A simplified steering device assures fast, effortless and safe control at all times. The clutch lever, within convenient reach of a comfortable, padded, operator's seat, actuates internal expanding band friction clutches. This permits instant change in direction travel, smoothly and noiselessly, and results in a more satisfactory back and forth ironing motion.

All working parts are accurately made of the finest materials — the same high standard of quality always identified with any Clyde product. The frame is of exceptionally rugged construction; angles and plates expertly welded into a substantial, one-piece unit. Front and back rollers are of heavy plate, rolled to a true circle, with axes turning in ball bearings that require greasing but once a year. The two-section, large diameter front rollers provide easier turning and eliminate danger of bumps or of scuffing the surface being rolled.

Consult your Clyde distributor or write in for complete prices and specifications.



CLYDE

CLYDE IRON WORKS, Inc.

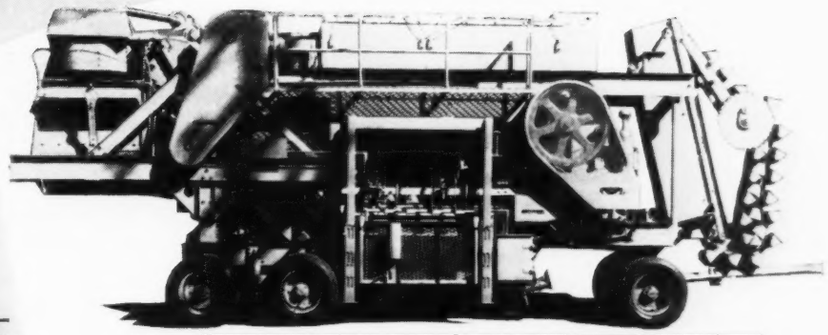
Duluth 1, Minnesota

THE MODEL

First in Portability
Fastest Set-up
Finest Mixes

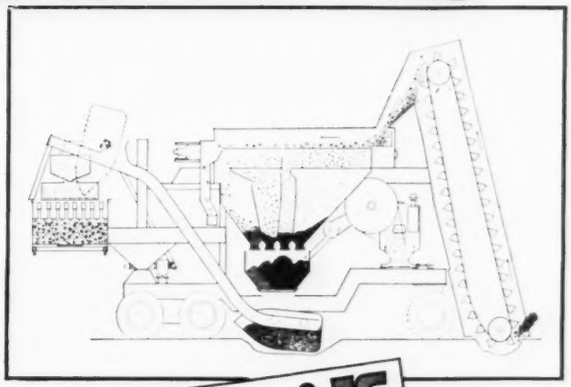
A SUPER-PORTABLE BATCH TYPE ASPHALT PLANT

—THE MODEL F



● Yes, sir—here it is—the Model F—a 2500-lb. batch type portable asphalt plant that you can set up and get into operation in a matter of minutes. The only part that has to be raised is the folding elevator. Twin-shaft, 2500-lb. capacity pug mill, 36"x10' triple-deck horizontal Cedarapids Symons screen, 4-compartment (6 batch) hopper, 25 cu. ft. batcher, 2500-lb. springless dial scale, 25 cu. ft. skip hopper, and steam-jacketed pump are in place at all times. Ground level charging hopper assures quick, easy loading. Pug mill discharges directly into trucks thereby eliminating troublesome delivery conveyor belts. Operator's platform on the ground level makes possible one-man control of all operations. Offered with a choice of gas, diesel or electric power, with or without a drier for hot or cold mixes.

The Model F is the ideal plant for paving contractors, counties, and state highway departments. It grades the aggregate, weighs the material, mixes it to suit specifications, does it better and satisfies the most rigid inspection. Get the details today.



Cedarapids

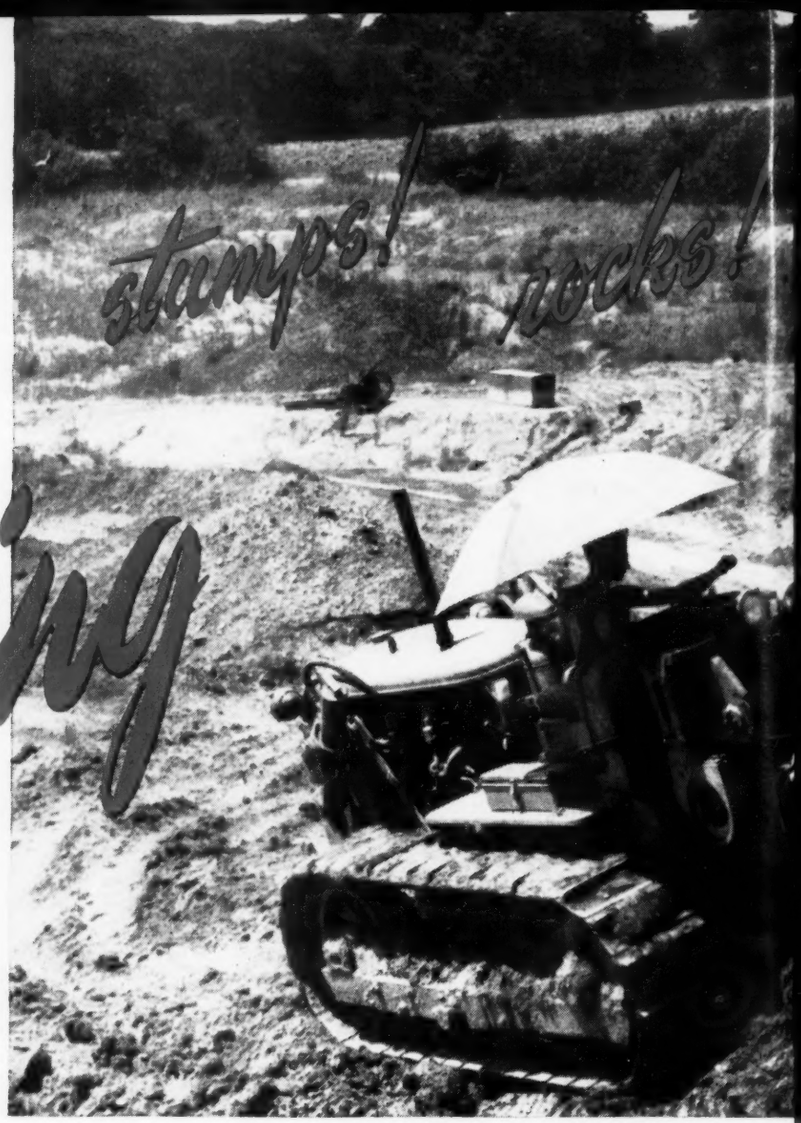
Built by IOWA

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U. S. A.

THE IOWA LINE
of Material Handling Equipment Includes

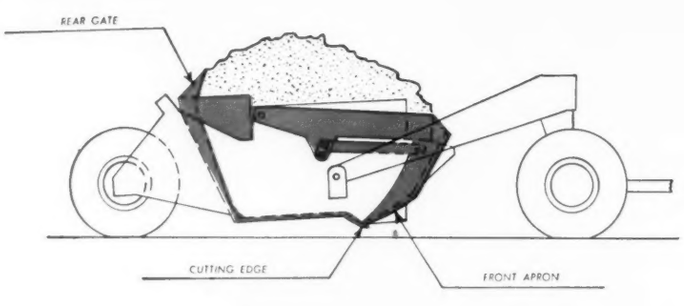
ROCK AND GRAVEL CRUSHERS
BELT CONVEYORS—STEEL BINS
BUCKET ELEVATORS
VIBRATOR AND REVOLVING SCREENS
STRAIGHT LINE ROCK AND GRAVEL PLANTS
FEEDERS—TRAPS
PORTABLE POWER CONVEYORS
PORTABLE STONE PLANTS
PORTABLE GRAVEL PLANTS
REDUCTION CRUSHERS
BATCH TYPE ASPHALT PLANTS
TRAVELING (ROAD MIX) PLANTS
DRAG SCRAPER TANKS
WASHING PLANTS
TRACTOR-CRUSHER PLANTS
STEEL TRUCKS AND TRAILERS
KUBIT IMPACT BREAKERS

FASTER . . .
. . . EASIER
CLEANER . . .
Dumping



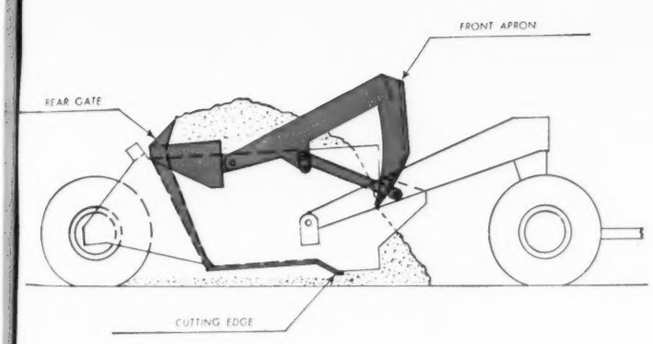
Regardless of the kind of material you have to load, you can always be sure that it will be dumped positively and cleanly on every trip with a LaPlant-Choate "Carrimor." This is because the rear gate of the "Carrimor" not only bulldozes all material out of the bowl but the front apron moves ahead and out of the way at the same time. So there's no chance of jamming or sticking . . . no lost time or broken cables trying to get rid of that "last yard." With a "Carrimor" the full load is dumped quickly and easily and the rear gate is positively returned the full distance, ready for the next trip.

Moreover, these new LaPlant-Choate scrapers in 8- and 14-yard capacities will carry a uniform spread at consistently higher tractor speeds because the cutting edge is positively controlled and completely independent of other moving elements. Add to these advantages superior "load-ability," "grade-ability" and low horsepower requirements and you'll see why so many agree on LPC for lowest possible cost per yard. See your LaPlant-Choate "Caterpillar" distributor, or write: LaPlant-Choate Manufacturing Company, Inc., Cedar Rapids, Iowa; Oakland, California.

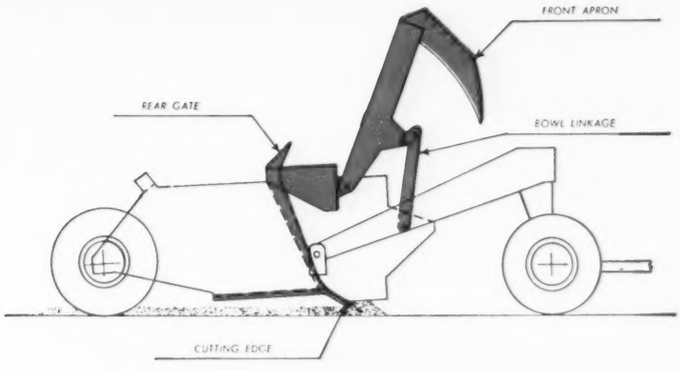


Here is an LPC "Carrimor" shown with a full heaped load, ready for dumping. Thanks to a newly designed cable arrangement, the cutting edge can now be lowered to any desired spreading depth and positively locked to insure a smooth, even spread, without further manipulation of the power control unit.

LaPLANT
Engineered



This sketch shows you the generous initial opening of the front apron, which allows the material in the front of the bowl to spill out by gravity before the rear gate starts forward. Note how the front apron moves ahead as it travels up, thus assuring an absolutely free exit of material.

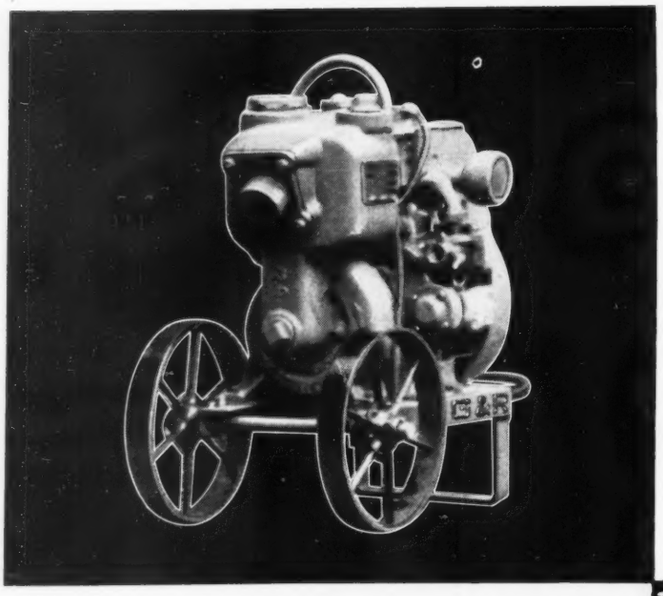


Here you see an LPC "Carrimor" in full dumping position, showing how LaPlant-Choate's patented linkage arrangement functions in emptying the scraper bowl completely, without any chance of jamming sticky or bulky material between the rear gate and front apron—an exclusive LaPlant-Choate feature!

CHOATE

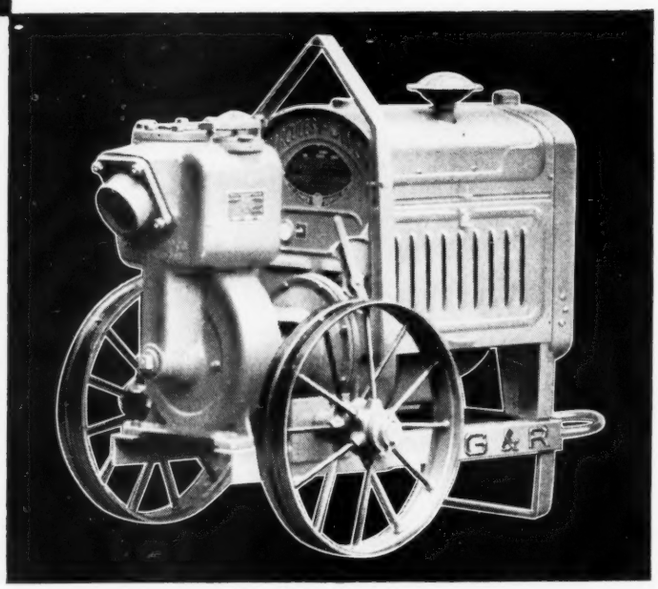
Earthmoving

Lowest Possible Cost per yard



Start it-

-THEN FORGET IT



A GORMAN-RUPP IS BUILT FOR LONG, HARD SERVICE

With no time off for rest or repairs, Gorman-Rupp self-priming centrifugal pumps have run months without let up at full capacity. This kind of brute strength is what you need in heavy de-watering jobs. They're built for this kind of service and they're delivering it every day! Models are available with ratings up to 125,000 gallons per hour at average heads.

Furthermore, Gorman-Rupp pumps aren't choosy. They will handle any muck, weeds, sand and solid matter that can pass the intake, without clogging and without accumulating any such refuse within the interior of the pump.

Gorman-Rupp pumps are full automatic self-priming. Start the engine and you start the water. No by-passes or valves are used for this operation. Therefore, no efficiency is lost in pumping.

These are the simplest centrifugal pumps built -- least subject to wear and easiest to maintain. They carry a money-back guarantee to give complete satisfaction. Your nearest Gorman-Rupp distributor will be glad to put one on your next job and let you see for yourself.

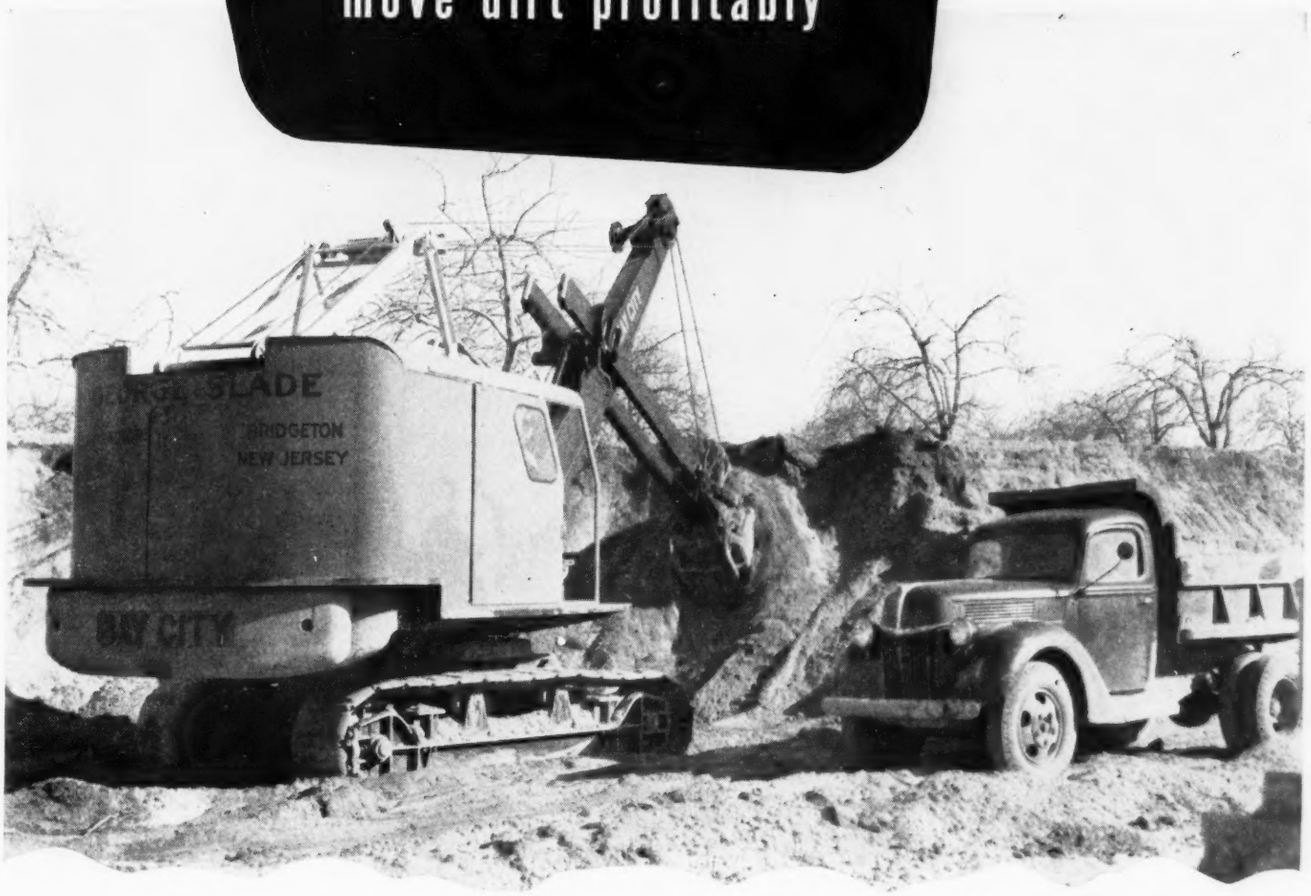
THE GORMAN-RUPP COMPANY

GORMAN-RUPP PUMPS — UNSURPASSED FOR PUMPING FAST

308 BOWMAN STREET • MANSFIELD, OHIO

BAY CITY SHOVELS

move dirt profitably



On job after job where dirt is being moved profitably, the heavy-duty construction of BAY CITY is proved with dependable, economical service. From the ⅜ yard convertible shovel up to the "65" shown here, BAY CITY follows the same general pattern—strongly built and rugged throughout to withstand the severe shocks and stresses of tough going. Long, wide crawlers • Alloy cast bases • Tandem drums on separate shafts • Booster clutches • Sturdy, welded shovel boom • Straddle type dipper sticks • One-piece chain crowd • All these advantages add up to greater job performance. Why not get acquainted with the bigger values offered by BAY CITY—Write for catalog or see your nearest BAY CITY dealer. BAY CITY SHOVELS, Inc., Bay City, Michigan.

AMERICA'S FINEST BUILT IN BAY CITY AND SOLD THROUGHOUT THE WORLD

BAY CITY

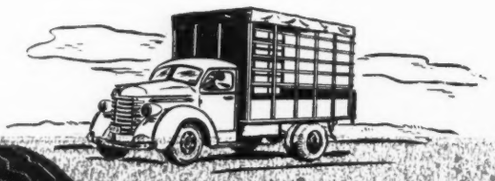
SHOVELS • DRAGLINES
CRANES • HOES • CLAMSHELLS

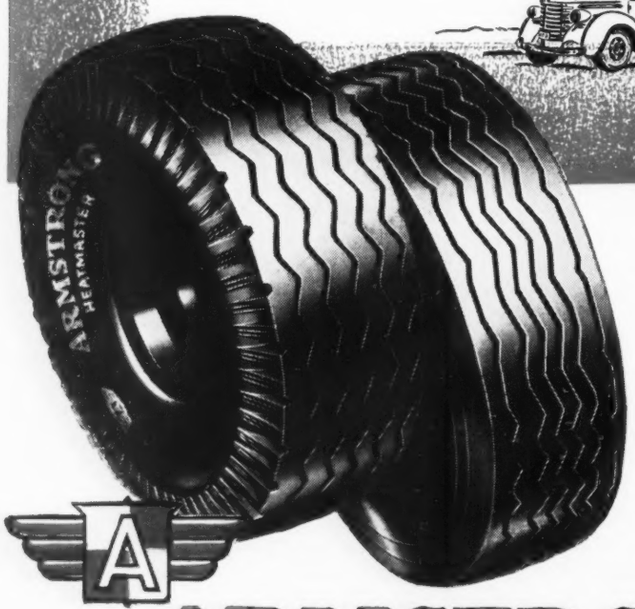
SEE YOUR NEAREST DEALER for Bay City excavating and material handling equipment in sizes from ⅜ to 1¼ yards having crane rating up to 20 tons. Both crawler and pneumatic tire mounting.

Our tires have to be *dependable!*

B. RABINOWITZ
Newark Fruit Co.
New Haven, Conn.

● "In making rapid produce hauls our drivers are guided by one rule: perishable foods must arrive at the market on time. Even a brief highway delay may mean the loss of an entire day's business. Our tires have to be dependable—that's why we buy Armstrongs!"





HUNDREDS of tire-wise commercial car operators are now acutely aware of this important fact: *you can't buy a better tire than an Armstrong!* Since 1912 Armstrong has pioneered in making tires that wear longer and cost less. You can count on Armstrong to give you a tire that will perform better, last longer, stand up under all conditions and cost you less per mile of use. That's not a statement—it's a promise!

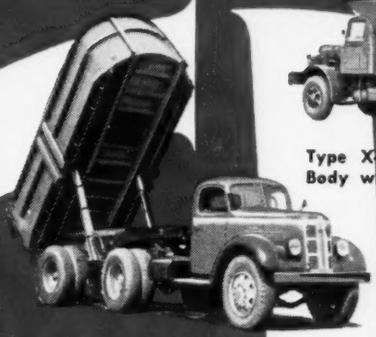
For literature or information write your Armstrong Distributor or to Armstrong Rubber Company.

ARMSTRONG TIRES

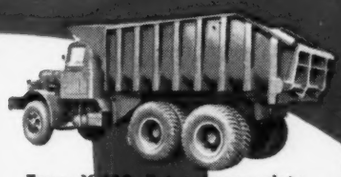
Manufacturers of Quality Tires and Tubes Since 1912 · General Offices and Plant—460 Elm Street, West Haven 16, Conn.

BETTER BUILT FOR BEST PERFORMANCE

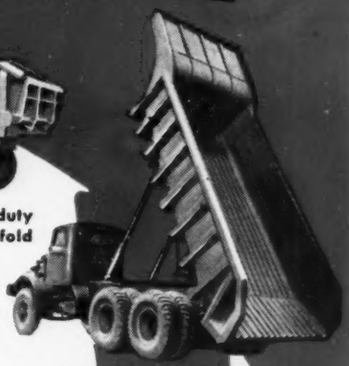
One way side dump Body with dual telescopic Hoist. Automatic downfold gate.



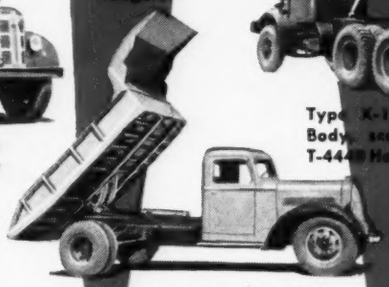
Type Q12 Body with Model T440 dual telescopic Hoist. Capacity 16 cu. yds.



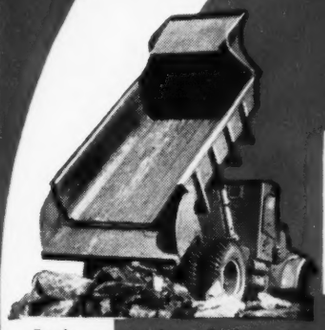
Type X-112 Extra heavy duty Body with automatic downfold tailgate.



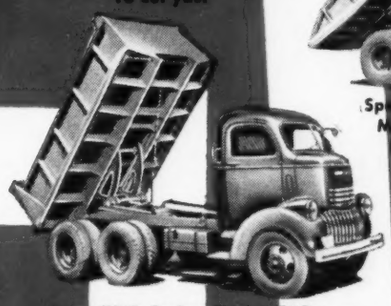
Type X-112 Extra heavy duty Body, scoop end, with Model T-4440 Hoist. Capacity 19 cu. yds.



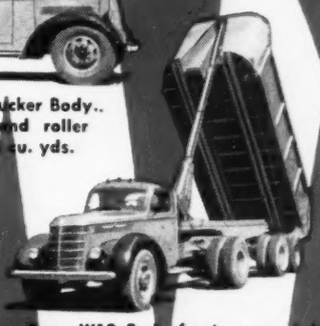
Special scoop end mucker Body.. Model F8B cam and roller Hoist. Capacity 5 cu. yds.



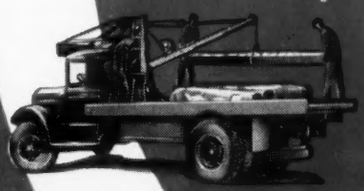
Rock excavating Body with downfolding gate.



Type W12 Body—Model F4C cam and roller Hoist. Capacity 6 cu. yds.

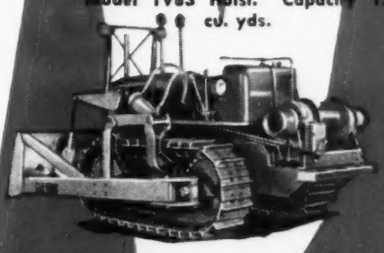


Type W12 Body, front recessed for Model TV83 Hoist. Capacity 15 cu. yds.

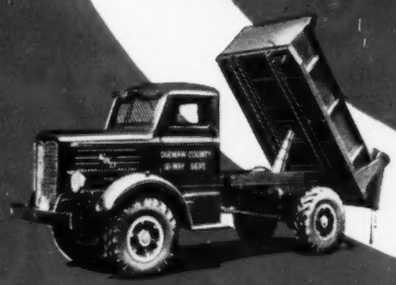


Telescopic boom Crane. Radius 8 to 20 feet.

Type C12 Body and Model D6 or D7 Hoist. Dumping angle 55°.

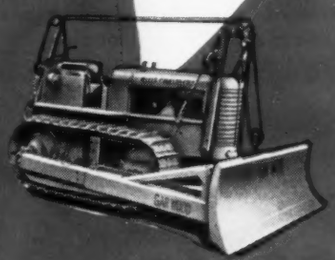


Bulldozer and rear mounted winch.



Type W12 Body and single telescopic Hoist. Double acting tail-gate Capacity 4 cu. yds.

West Coast Special W-12 Body. Model F8C cam and roller Hoist. Capacity 10 cu. yds.



Cable Dozecaster with angling blade.

TRADE MARK

GW TRADE MARK

GAR WOOD INDUSTRIES, INC.

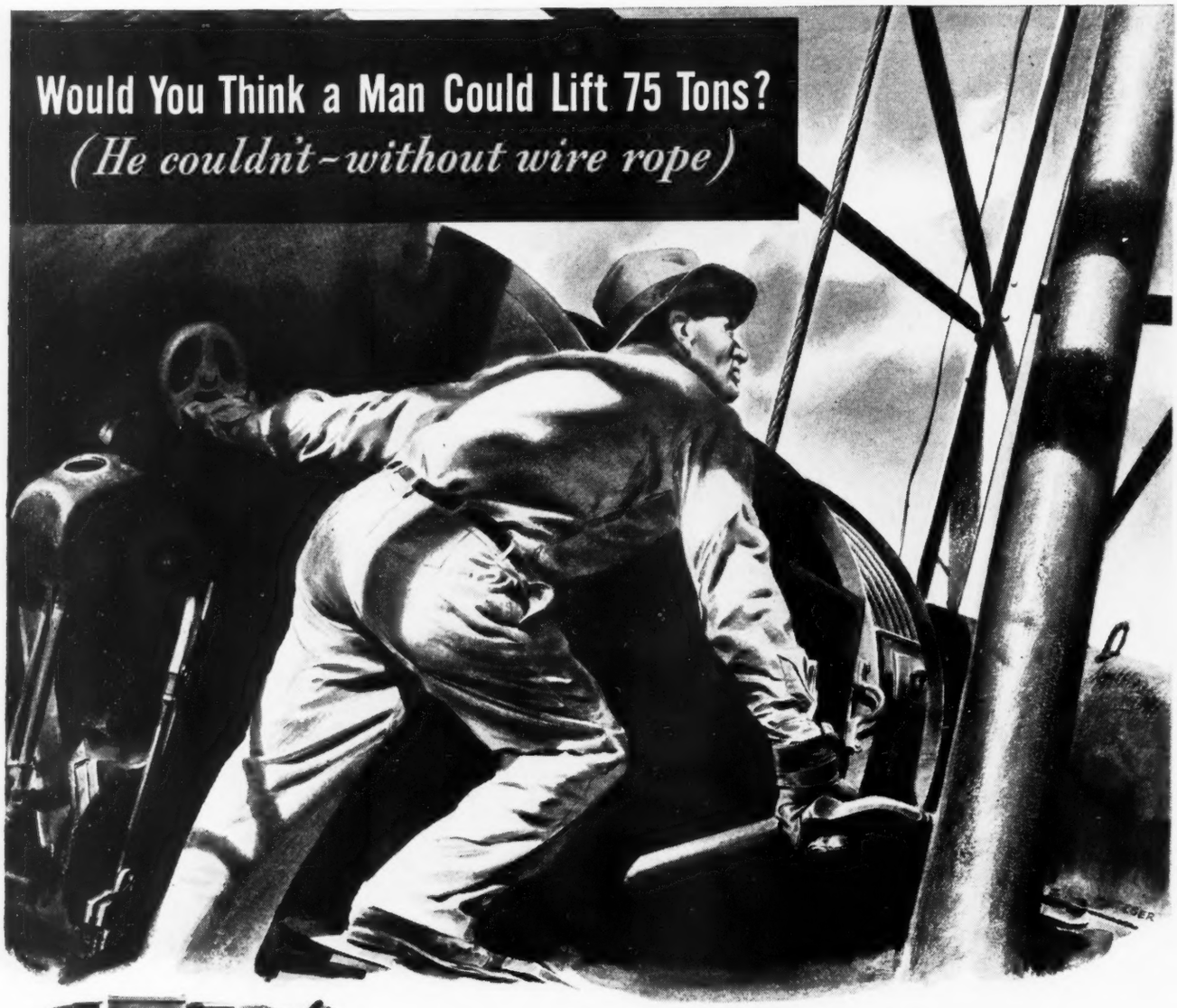
7924 RIOPELLE ST. • DETROIT 11, MICH.

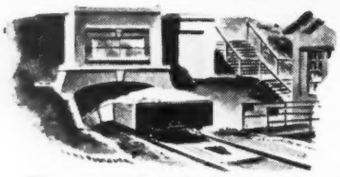
WORLD'S LARGEST MANUFACTURERS OF TRUCK AND TRAILER EQUIPMENT

OTHER PRODUCTS: TANKS • HEATING EQUIPMENT • MOTOR BOATS

Would You Think a Man Could Lift 75 Tons?

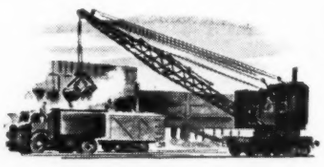
(He couldn't—without wire rope)





They use a lot of wire rope in and around coal mines. One important ground use is for car spotters and retarders. Preformed wire rope is easier and safer to handle.

He's lifting 15,000 feet of heavy steel drill pipe—no wonder he keeps his eye on the wire rope. Running at high speeds, wire rope tends to whip and pile up on the drum. This crushes rope and forces early shutdowns for replacement. Operators prefer Preformed wire rope because it resists whipping, spools evenly and reduces shutdown frequencies.



Power shovels scoop up earth and rock with giant bites. The wire rope makes it look easy. Being more flexible, Preformed wire rope runs over small sheaves with minimum wear.

Modern machines almost invariably are equipped with Preformed wire rope. Preformed is flexible and limber. It is tractable and free from internal tension. It handles easier, so operators like to work with it, and it lasts longer so the front office likes to order it.

ASK YOUR OWN WIRE ROPE MANUFACTURER OR DISTRIBUTOR

WIRE ROPE HANDLES EASIER - LASTS LONGER

Gulf Products selected by Contractor on Mississippi's largest levee project

Gulf Quality Lubricants and Fuels help Atlas Construction Company get maximum job efficiency under tough operating conditions

Moving a total of 10,350,000 yards of earth—under difficult operating conditions and against a rigid time schedule—is no small undertaking. It is the kind of job on which the contractor is not likely to take chances with his equipment. He wants proper lubrication and efficient fuels to insure top performance and prevent costly delays caused by breakdowns.

That is why Atlas selected Gulf quality lubricants and fuels for their two Mississippi Levee projects, which they completed well ahead of schedule. Both were a grueling test for men and equipment. On one of the jobs, at Bougere, upwards of 8,500,000 yards were moved—the largest single levee project ever undertaken on the Mississippi River.

The Atlas Construction Company, and many other leading contractors, have formed the habit of using Gulf quality lubricants and fuels as basic profit insurance. They know that Gulf products help speed up the job—keep operating costs at rock-bottom levels.

Call in a Gulf Service Engineer before you start your next job—he will help you complete it more quickly and at a larger profit. Write, wire, or phone your nearest Gulf office today.

GULF

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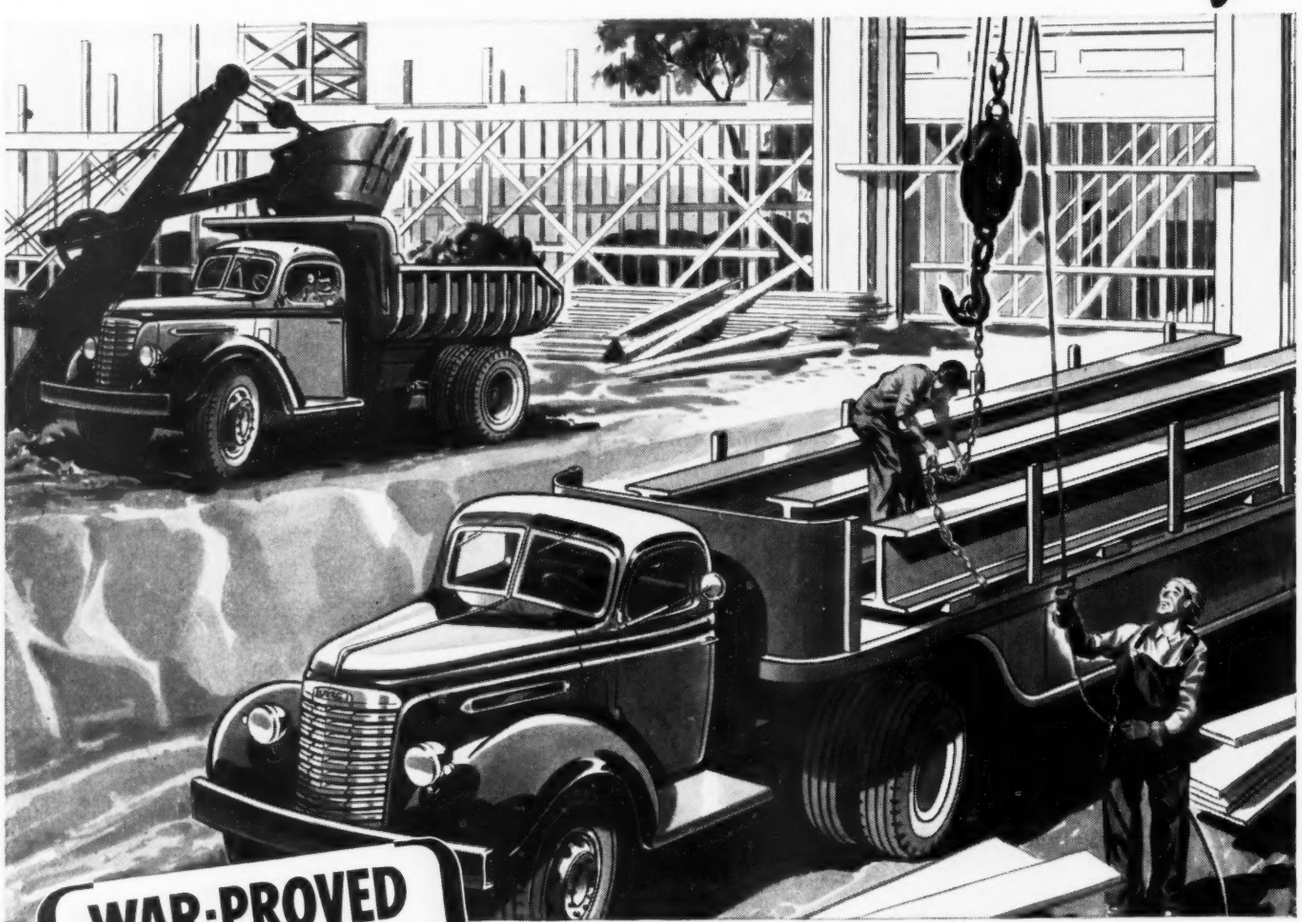
NEW GMCs for Heaviest Hauling



WAR-PROVED and IMPROVED FOR 1946

- Powerful, economical "Army Workhorse" engines of Valve-in-Head design with Tocco-hardened Crankshafts, Airplane type "Durex" Main Bearings, Heat-resisting Exhaust Valves with Improved Valve Seat Inserts, Positive Crankcase Ventilation, Turbo-Top Pistons and Full Pressure Lubrication through Rifle Drilled Connecting Rods.
- Rugged, built-for-the-job chassis with extra strong Frames, Springs and Axles, heavy duty Transmissions and Clutches, Needle Bearing Universal Joints, Recirculating Ball-Bearing Steering and powerful, easy-action Brakes.
- Rider Ease Cabs with Cradle-Coil Cushions, Wide Visibility "V" Windshields, Quick-vision Instrument Panels, All-Weather Insulation and Controlled Ventilation.

New GMCs offer you the most in heavy duty truck value in a most complete selection of models. There are tractor units, dump models, four-wheelers and six-wheelers in tonnage ranges to fit every requirement . . . and with equipment options which include worm, double reduction and dual drive axles, 5-speed underdrive and overdrive transmissions, gasoline and diesel engines, heavy duty clutches and air brakes. It will pay you to investigate GMC. For, whatever you haul . . . sand and gravel, cement, ore, steelwork, heavy construction equipment and many more . . . you'll find a war-proved, improved GMC truck ideally suited to the job.

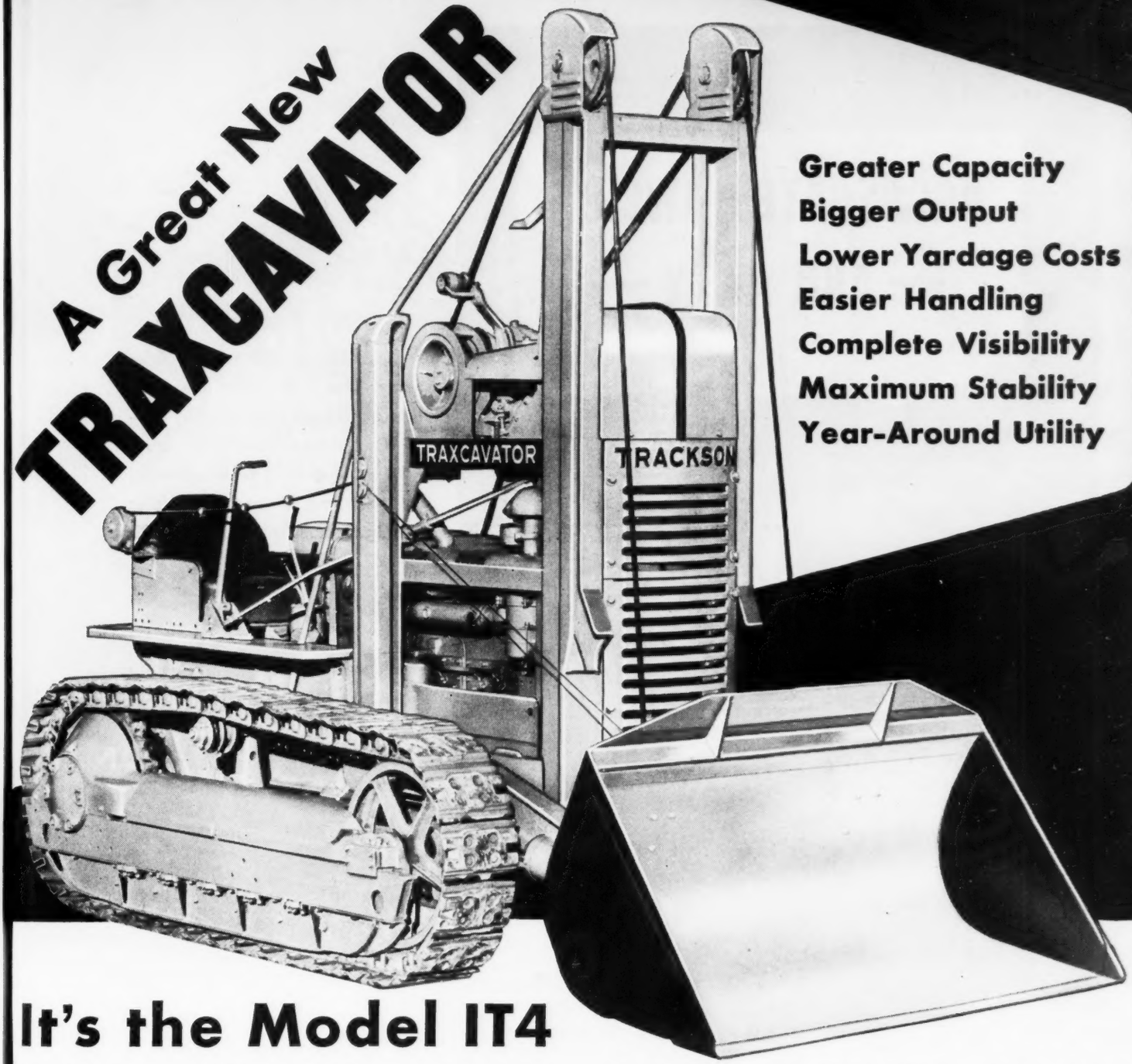
THE TRUCK OF VALUE

GMC TRUCKS

GASOLINE DIESEL

GMC TRUCK & COACH DIVISION • GENERAL MOTORS CORPORATION

A Great New TRAXCAVATOR

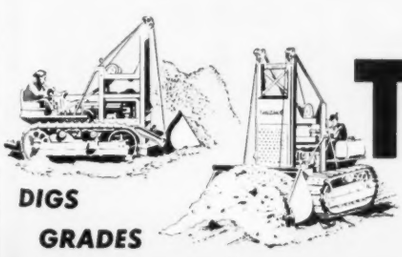


Greater Capacity
Bigger Output
Lower Yardage Costs
Easier Handling
Complete Visibility
Maximum Stability
Year-Around Utility

It's the Model IT4

A great new TRAXCAVATOR is here, with all the basic advantages that have made TRAXCAVATORS the standard of comparison the world over, plus many features that insure easier handling, bigger output and lower yardage costs. Thoroughly field tested under severest conditions, the IT4 is the most rugged and productive tractor shovel of its size ever offered. It will excavate and dig big yardages at low cost in toughest soils, load trucks and trailers, transport and load all kinds of bulk materials and also ditch, cast, carry, spread, strip, bulldoze, backfill, level, landscape, terrace, trench, remove snow and do a host of other earth-moving and material-handling jobs. This versatility means year around usefulness and profit. The big one-cubic yard bucket is wider than the tractor tracks which permits excavating and grading close to and alongside walls and curbs and easy maintenance of grades. The IT4 and "Caterpillar" D4 tractor on which it mounts are engineered as a unit to match the full capacity of each other and are sold and serviced by the same dealers. Get the facts on this modern, new TRAXCAVATOR from your TRACKSON-"Caterpillar" dealer or write direct.

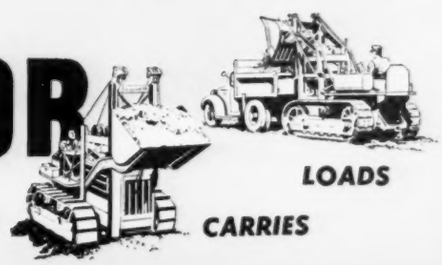
TRACKSON COMPANY, Dept. CM-56, Milwaukee 1, Wis.



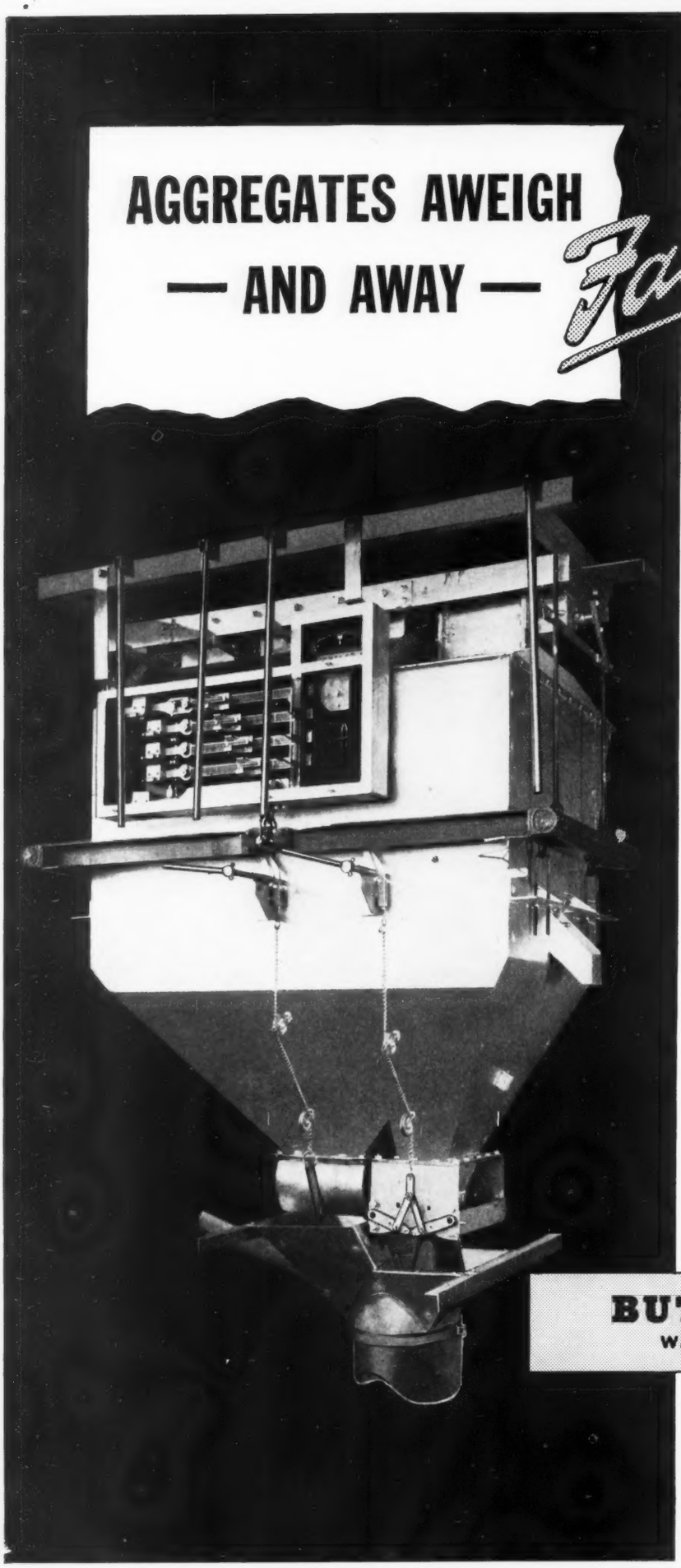
TRAXCAVATOR

REG. U. S. PAT. OFF.

THE ORIGINAL TRACTOR EXCAVATOR



AGGREGATES AWEIGH — AND AWAY — *Fast!*



KEEPING up with a dual drum paver plus a 27E from the same batcher is high production by anyone's standard. It's no stunt performance but a regular day-in, day-out procedure for a Butler Weigh Batcher equipped with Selective Beam Control.

★

High production, however, is only one talent;—in Butler Weigh Batchers any production demand, no matter how quick-stepping, is always coupled with absolute accuracy.

★

Such production requirements are not those of tomorrow;—they are here now. The contractors who will build the gigantic airfields to handle the planes of today which attain almost the speed of sound, the contractors who will lay the great highways already at the construction stage,—are the contractors who are BUTLER equipped.

BUTLER BIN CO.
WAUKESHA, WISCONSIN

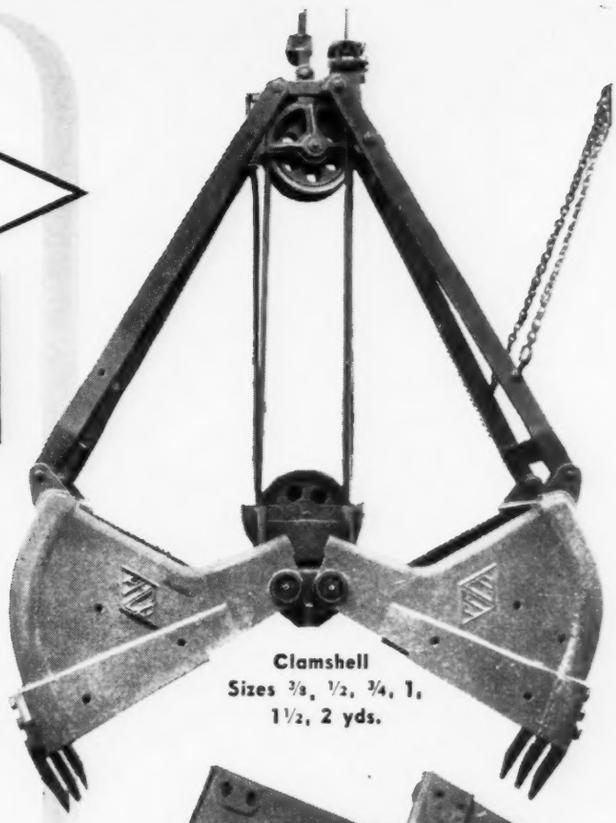
To study in detail the reasons why Butler Weigh Batchers offer more in instant control, faster production, split-hair accuracy and years of dependability,—write for Bulletin 150E.

PMCO

America's Most Complete Line of Material Handling Buckets

All purpose-

- **SHOVEL**
- **PULLSHOVEL**
- **DRAGLINE**
- **CLAMSHELL**



Clamshell
Sizes 3/8, 1/2, 3/4, 1, 1 1/2, 2 yds.

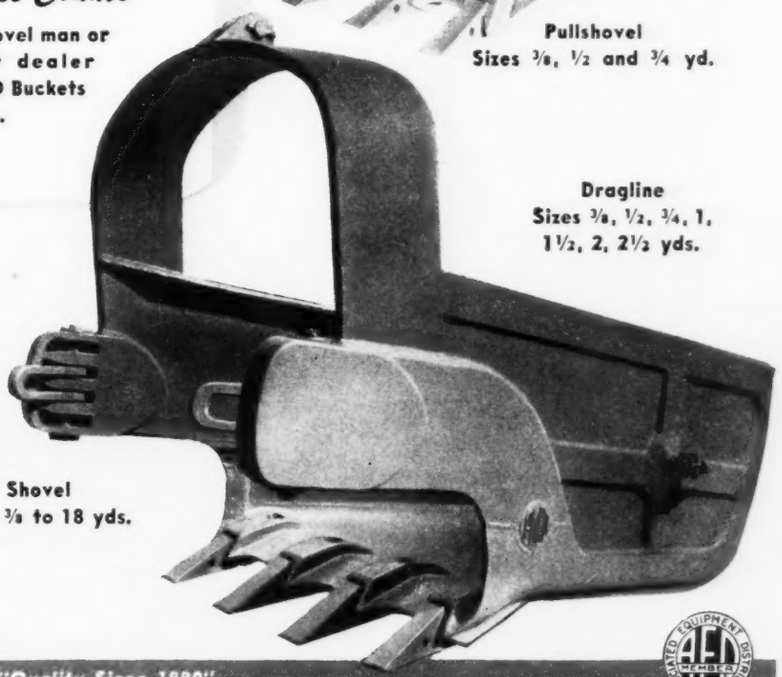
• FRONTS, BOTTOMS, SCOOPS and TEETH are 14% manganese steel developing tensile strength up to 120,000 p. s. i. This high percentage manganese steel gives tough, rugged strength for hard service and allows wide set corner teeth for easy entrance in digging. Volume production methods enable us to build a better bucket with amazing economies in manufacturing.

Pullshovel
Sizes 3/8, 1/2 and 3/4 yd.

On the 1/2 yd. and 3/4 yd. Shovel, Pullshovel, and Dragline Buckets, all teeth are interchangeable — a great advantage to operators.

Experience Counts

See your shovel man or equipment dealer about PMCO Buckets and Dippers.



Dragline
Sizes 3/8, 1/2, 3/4, 1, 1 1/2, 2, 2 1/2 yds.

Shovel
Sizes 3/8 to 18 yds.

"Quality Since 1880"

PETTIBONE MULLIKEN CORP. CHICAGO 51, U. S. A.

WE OPERATE THE LARGEST AND MOST COMPLETE MANGANESE STEEL FOUNDRY IN THE UNITED STATES.

Meet the "

CATERPILLAR

REG. U.S. PAT. OFF.

"IRON QUINTS"

FIVE "Caterpillar" Diesel D8 Tractors started stripping anthracite coal at Plymouth, Pa., in the fall and winter of 1941. Up to March 15, 1946, the work records of the five machines, taken direct from their hour-meters, were as follows:

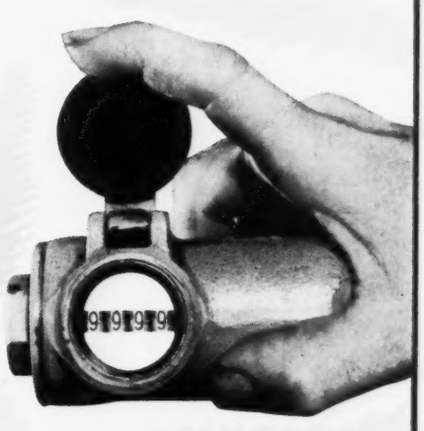
D8	1H9384	21,159 hours
D8	1H9236	21,733 hours
D8	1H9930	20,936 hours
D8	8R134	20,717 hours
D8	1H9730	22,485 hours

That adds up to a total of 107,030 hours of the toughest kind of work — ripping and bulldozing rocky overburden — loading and hauling 30-yard scrapers — climbing stiff grades — running in gritty mud and on slippery shale. Together, at a low estimate, the five units have moved 5,000,000 yards of earth and rock!

In the words of Paul Goddard, General Superintendent for Carey, Baxter & Kennedy, Inc., the owners—"*There's just nothing to compare a D8 with!*"

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

Why does "Caterpillar" put an hour-meter on all its engines? Because the men who build those "Caterpillar" Diesels are willing to back the long life of their product against all comers.



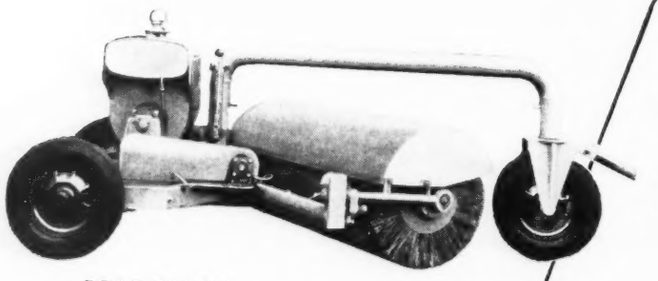
DIESEL

ENGINES • TRACTORS • MOTOR GRADERS

EARTHMOVING EQUIPMENT

IT'S NOT WHAT YOU LIKE TO DO - BUT WHAT YOU DO THAT COUNTS

"SPRAY MASTER"
PRESSURE DISTRIBUTOR

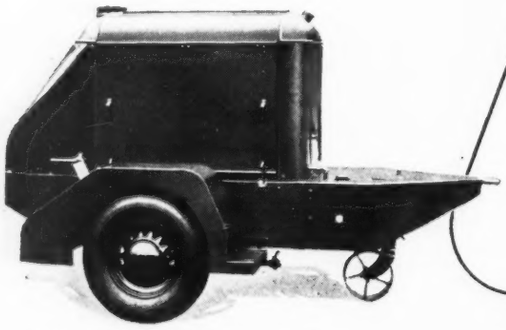


ROAD BROOM

When those big Black Top Road, Highway or Airport Runway jobs are ready for Construction or Repair—do *you like to do* a modern efficient job—or do you *do* a modern efficient job?

If you have the right Equipment, engineered, tested and proven like Littleford "Spray Master" Pressure Distributors, Road Brooms, "Tankar" Steam Heaters, Supply Tanks, then there's no reason for not doing a perfect Black Top Job.

Let's take a look at these Littleford Units and see why they're efficient and modern. The "Spray Master" with Full Circulating Vacuum Flow Spray Bar circulates the material by Vacuum not pressure. Road Brooms have Hydraulic Tension Control on the Brush for adjusting Brush tension on Road Surface. "Tankar" Steam Heater produces steam in two minutes time. Supply Tanks can be built without the use of a frame—known as Littleford Frameless Constructed tanks. It's what you *do* that counts and you can count on Littleford Black Top Road Equipment.



"TANKAR" STEAM HEATER

SUPPLY TANK

BLACK TOP ROAD MAINTENANCE EQUIPMENT · LB · SINCE · 1900

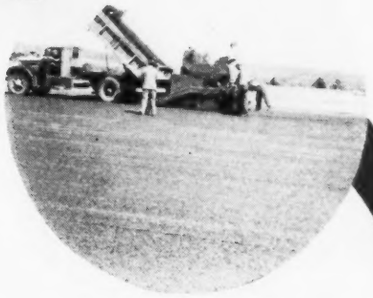
LITTLEFORD

LITTLEFORD BROS., Inc.

465 E. PEARL ST., CINCINNATI 2, OHIO

These road builders are *far apart* geographically, but *united* in their choice of Texaco Asphalt

An Illinois road builder resurfaces a State highway with Texaco.



A Massachusetts road builder constructs airport runways with Texaco.

A Colorado road builder gives a secondary road a low-cost Texaco surface.

Look around the country and observe America's road builders at work—

One is building the runway system of a modern airport—another is constructing a section of state highway—a third is paving the principal street of a progressive city.

Note the impressive number of these road builders who have chosen Texaco Asphaltic products for their projects. The types of Texaco construction on which they are working include heavy-duty pavements of the plant-mixed or penetration macadam type, low-cost asphalt surfaces of the road-mix or plant-mix type, and single or double surface-treatments.

Texaco Asphalt Cements, Cutback Asphalt and Slow-curing Asphaltic Oils are available to road builders everywhere east of the Rockies. Texaco engineers, who are Asphalt specialists, are at your service.

Write our nearest office.

A Texas road builder paves an important city street with Texaco.

A Virginia road builder surface-treats a town road with Texaco.

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 17

Boston 16 Chicago 4 Denver 1 Houston 1 Jacksonville 2 Philadelphia 2 Richmond 19

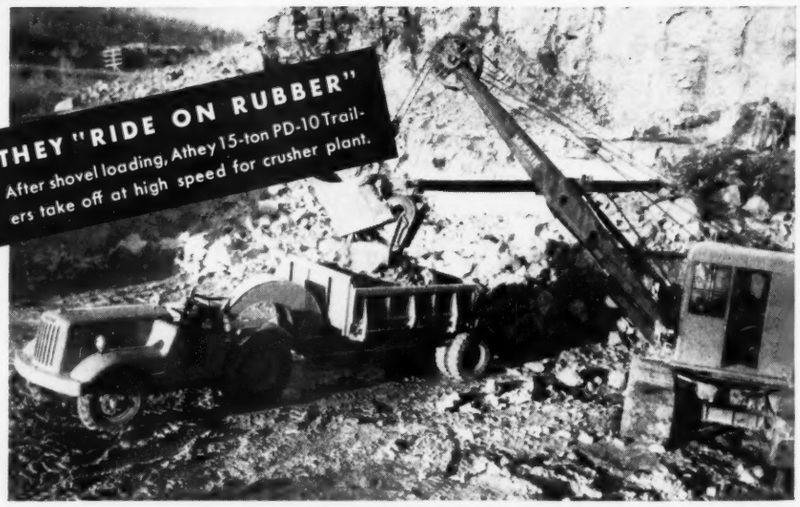
TEXACO

REG. T. M.

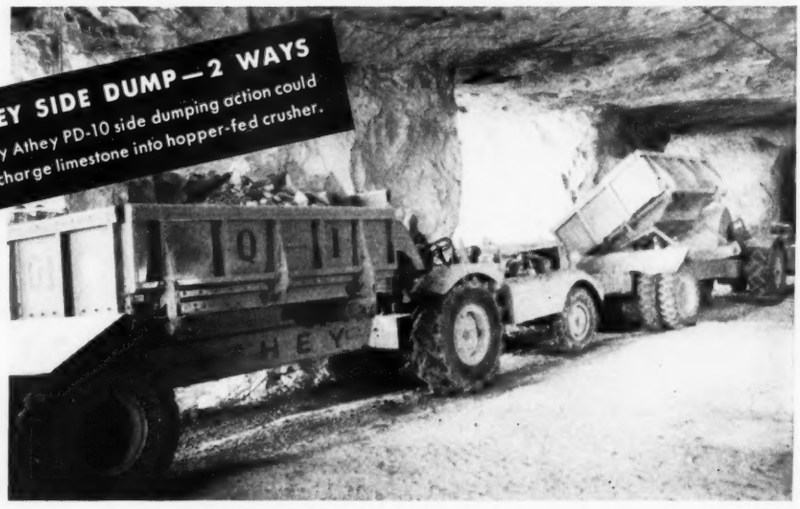
TEXACO ASPHALT

2 Reasons why . . .

ATHEY PD-10 TRAILERS WORK HERE!



1 THEY "RIDE ON RUBBER"
After shovel loading, Athey 15-ton PD-10 Trailers take off at high speed for crusher plant.



2 THEY SIDE DUMP—2 WAYS
Only Athey PD-10 side dumping action could discharge limestone into hopper-fed crusher.

Here's another job—the Peerless Lime Company of Ste. Genevieve, Mo.—where operating features of the new Athey PD-10 Trailer were the perfect answer to a tough job condition.

Operations at the huge quarry called for loading trailers both on the surface and in an underground "cave" cut in solid limestone. Haul distances to the crusher called for high-speed travel so that crushing plant would operate at maximum capacity. The new Athey PD-10 Trailer, powered by "Caterpillar" DW 10 rubber-tired Tractor, gave haul speeds up to 18 m.p.h. to speed delivery of material.

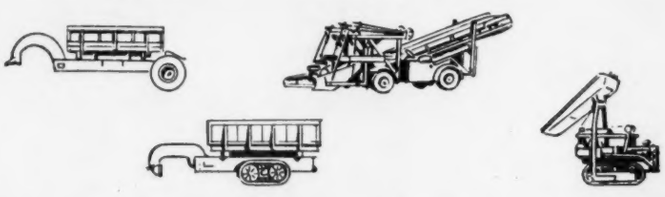
Unloading at crusher plant demanded a side-dump trailer due to location of hopper at mouth of cave and the design of the crusher setup. Athey PD-10 Trailer 2-way side dumping action again was the fast, low-cost answer for this material handling job.

ATHEY PRODUCTS CORPORATION • CHICAGO, ILL.

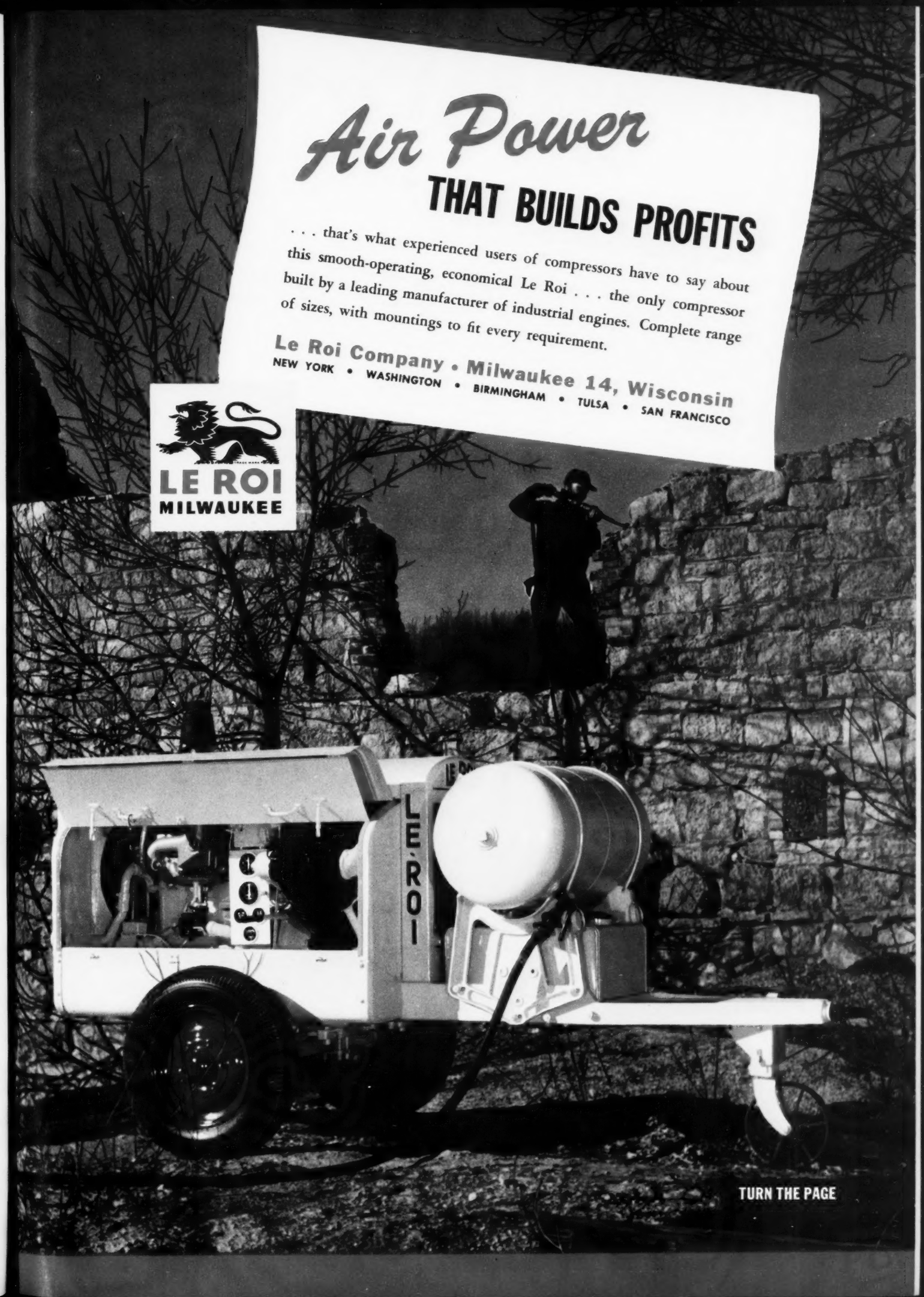
For big capacity, fast travel and more output—plus the versatile unloading of 2-way side dump—ask your Athey-"Caterpillar" Dealer for facts about the new PD-10 Trailer . . . powered by the famous "Caterpillar" DW-10 Tractor. He will gladly assist you in the selection and application of the right combination for lowest cost operation.

Athey APCOR Products

Athey



DEPENDABLE LOADING AND HAULING EQUIPMENT


Air Power
THAT BUILDS PROFITS
. . . that's what experienced users of compressors have to say about this smooth-operating, economical Le Roi . . . the only compressor built by a leading manufacturer of industrial engines. Complete range of sizes, with mountings to fit every requirement.
Le Roi Company • Milwaukee 14, Wisconsin
NEW YORK • WASHINGTON • BIRMINGHAM • TULSA • SAN FRANCISCO
LE ROI
MILWAUKEE
LE ROI
TURN THE PAGE

BIG OR SMALL...

Construction Machinery

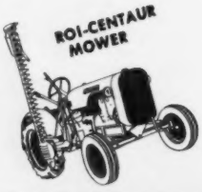
"Takes It on the Chin"

. . . and it pays to pick the leading makes powered with HEAVY-DUTY Le Roi engines

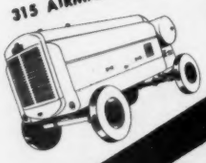
Le Roi builds *only* heavy-duty engines — has specialized for more than a quarter-century in licking the tough power jobs. Whether it's a small mixer or a big shovel, be sure that you get the benefit of this experience by selecting equipment that is Le Roi-powered. Write for bulletin.

Le Roi Company • **Milwaukee 14, Wisconsin**
NEW YORK • WASHINGTON • BIRMINGHAM • TULSA • SAN FRANCISCO

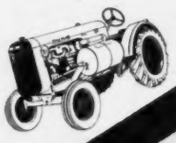
LE ROI ENGINE-GENERATOR UNIT



ROI-CENTAUR MOWER



LE ROI 315 AIRMASTER



LE ROI TRACTAIR

Look for the Le Roi Nameplate on

PUMPS CRUSHERS LOADERS
HOISTS MIXERS FINISHERS
— and other construction machinery

LE ROI
MILWAUKEE

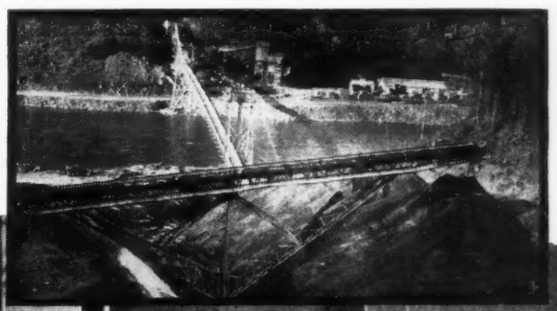
How B-G Belt Conveyors Can Cut Your Hauling Costs!

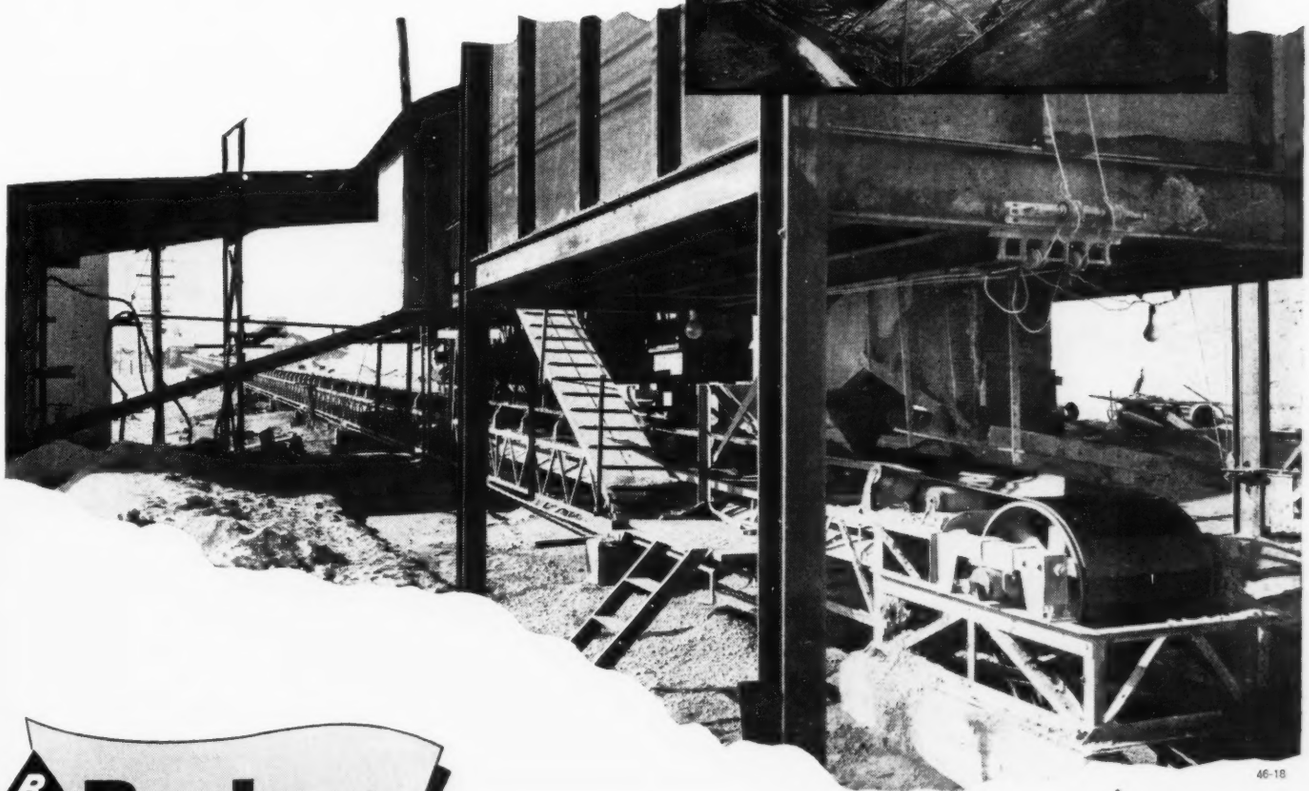
• If you've bulk materials to haul between your job and stock pile, railroad siding or mixing plant, don't overlook B-G belt conveyors.

These pre-engineered belt conveyors are widely preferred for short hauls uphill and down, across gullies, tracks, rivers and other obstructions. Wherever used, they carry a constant flow of materials at a cost per yard so low that other methods seldom can compete with them successfully.

Barber-Greene belt conveyors are prefabricated, "packaged" units—simply built, easily erected. They often pay for themselves by eliminating the cost of rail or roadbed preparation. And they may be easily lengthened or shortened; they are not a "one-job" proposition.

If you want to reduce haulage problems and save appreciable expense—while speeding up your entire job—why not check up on Barber-Greene belt conveyors yourself? Barber-Greene Company, Aurora, Illinois.





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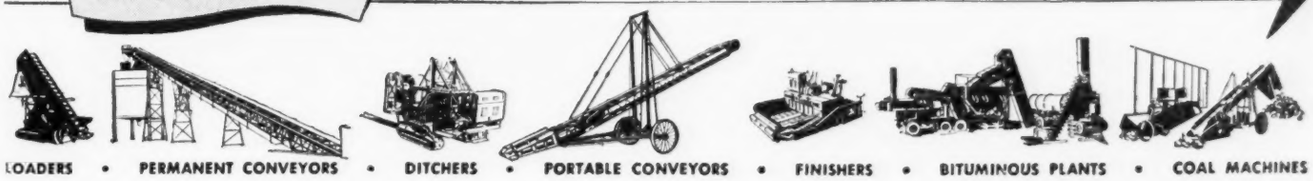
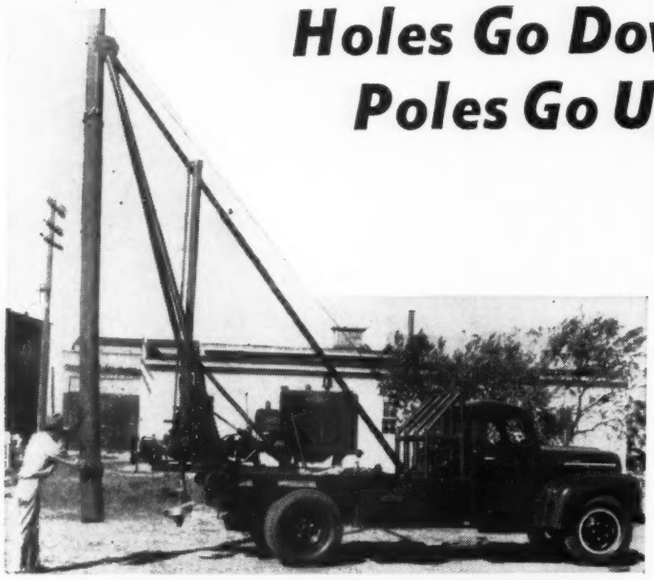
B-G Barber-Greene CONSTANT FLOW EQUIPMENT



LOADERS • PERMANENT CONVEYORS • DITCHERS • PORTABLE CONVEYORS • FINISHERS • BITUMINOUS PLANTS • COAL MACHINES

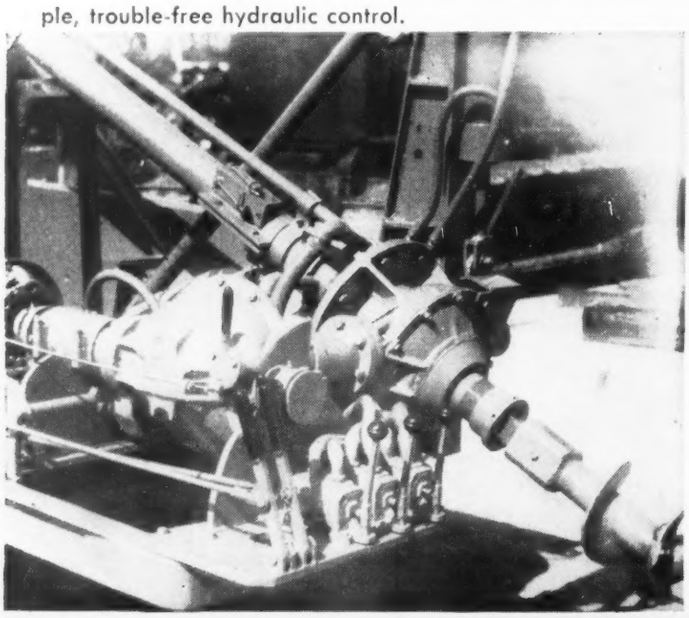
JAQUES
HYDRAULIC EARTH BORING MACHINE

Holes Go Down Quicker, Poles Go Up Faster With a Jaques



HYDRAULIC FINGER TIP CONTROL

Reduces operator fatigue. One man easily operates this machine as all controls are conveniently located. Peak operating speeds easily mantained hour after hour with this simple, trouble-free hydraulic control.



1. All plumbing is hydraulic controlled, enabling faster transportation from hole to hole as machine can be instantly lowered to traveling postion.
2. Faster drilling, as the hydraulic feed maintains a constant pressure on the bit—the texture of soil controls the rate of digging.
3. Hydraulic pressure on bit transmits less shock to machine while digging in rock.
4. Operator fatigue reduced to a minimum.
5. Anchor holes are easily drilled at any angle.

SPECIFICATIONS

Motor—Int. Model U4—with electric starter. **Construction**—Unit mounted on steel-I-beam skids (easily attached to or removed from truck). **Drive**—Mechanical—four forward speeds and one reverse. **Feed**—Hydraulic. **Lift**—Hydraulic. **Leveling**—Hydraulic. **Hole Size**—Up to and including 24 inches (larger diameter on special order). **Depth of Hole**—8 to 9 feet with standard machine (greater depth on special order). **Weight**—3400 pounds. **Width**—4 feet, 3 inches; **Length**—10 feet.

Immediate Delivery on Standard Models

for Further Information Write or Wire

JAQUES POWER SAW CO.
DENISON, TEXAS

OFFICE OF THE PRESIDENT
THE HEIL CO.
MILWAUKEE, WISCONSIN

JOSEPH F. HEIL

To the Earth-moving Industry:

What is Heil's position in the earth-moving field during this period of reconstruction?

This logical question vitally concerns our good customers and prospects, at a time when many plans are being made for new projects and for the addition of new equipment.

A few years ago, THE HEIL CO. introduced a line of earth-moving equipment with the most advanced design then available. Since that time Heil equipment has kept a step ahead of progress in this field.

Continuing our intensive program of engineering and development work, we have built soundly with men, methods, machinery, and facilities. At the present we are engaged in a program of expansion which provides further backing for our promise that Heil earth-moving equipment will be the best money can buy, and that it will serve you more profitably.

We intend in further advertisements in this publication to give you a brief picture of some of the resources behind Heil earth-moving equipment.

Yours very truly,

Joseph F. Heil

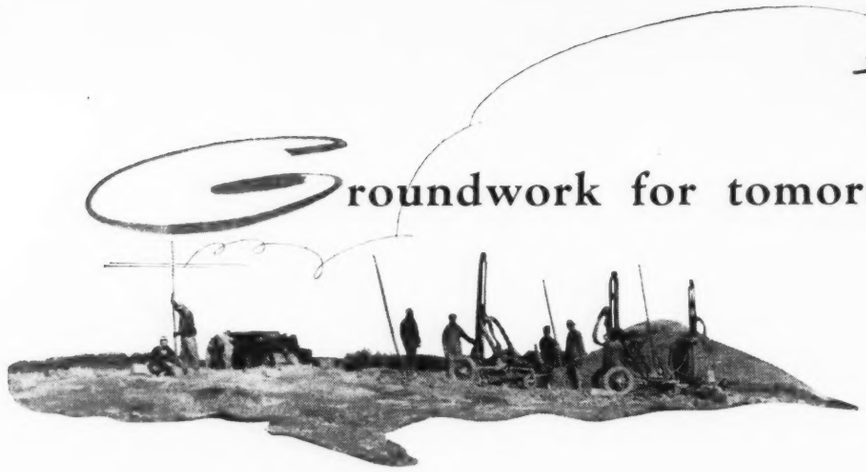
Joseph F. Heil
President

H-69

A partial view of our development engineering department where new advances in speed and performance are born.

THE HEIL CO.
GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

Groundwork for tomorrow's skyroads

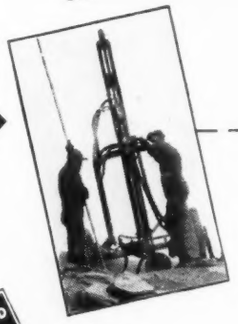


Another huge job is just ahead for you who have built America's highways. For America is taking to the air—and that means a network of airports. You can speed up airport construction and cut cost, too—if you have Gardner-Denver construction equipment to back up your men.

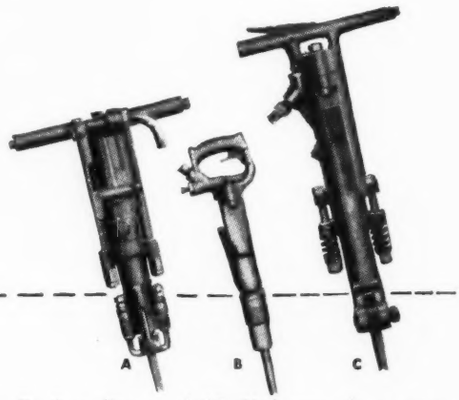
Gardner-Denver equipment can help you step up the pace of construction, for it stays on the job. Endurance has been built into it to assure efficient service without frequent "time out" for maintenance. For complete information, write the Gardner-Denver Company, Quincy, Illinois.

Gardner-Denver Gasoline or Diesel Water-cooled Compressors are completely water-jacketed for efficient, continuous operation in any climate or altitude.

Gardner-Denver Backfill Tamper is easy to walk over the fill—meets the most exacting requirements.



Gardner-Denver UM-99 Wagon Drill . . . fast, powerful and highly maneuverable.



A. *Gardner-Denver S-55 Sinker—a fast, easy riding drill with remarkable hole-cleaning ability.*

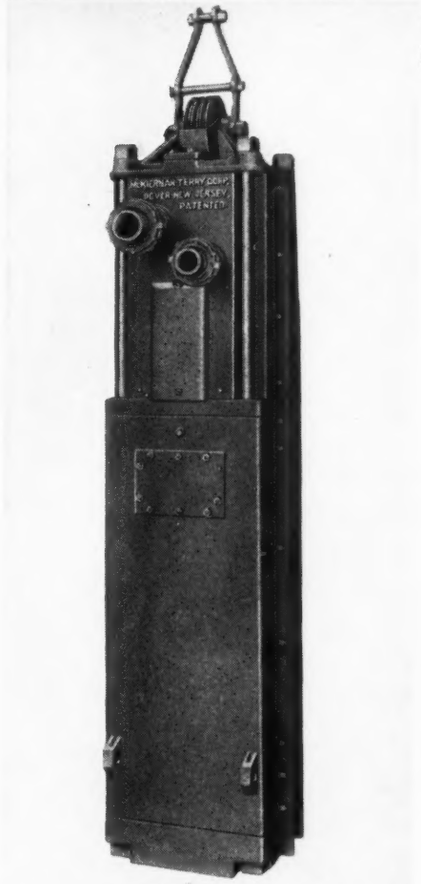
B. *Gardner-Denver 28 Spader reduces digging time. Available with a variety of tools.*

C. *Gardner-Denver B-72H Paving Breakers strike powerful blows for rapid, economical demolition.*

GARDNER-DENVER

Since 1859

Two-mile highway bridge across the Potomac River at Ludlow Ferry, Md.



The erection of this great bridge required the driving of extra long piles through dense, sandy clay under water.

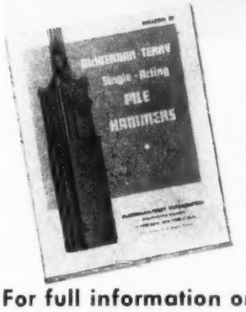
To accomplish this effectively, McKiernan-Terry designed special single-acting hammers capable of delivering heavy blows with a heavy mass ram at low velocity at point of impact. These hammers successfully drove 194-foot steel bearing H-beam piles to a cut-off 85 feet below water.

Widely known for the development of powerful heavy-duty *double-acting* pile hammers, McKiernan-Terry has also, for many years, been providing single-acting hammers for special problems involving dense substances and heavy mass piles — the *only* single-acting hammers that can be operated *under water.*

The expanded facilities of two large McKiernan-Terry plants offer prompt service in supplying both double- and single-acting pile hammers, as well as many types of hoisting and marine auxiliary equipment and specially designed and engineered machinery.

THE McKIERNAN-TERRY BLACKER HAMMER

Combines power hammer speed with hand sledge adaptability. Enables one smith to handle every type of hand forging operation without helpers. Increases capacity and output; saves time and labor. Ask for Bulletin 56.



One of two specially designed giant McKiernan-Terry Single-Acting Pile Hammers used by Merritt-Chapman & Scott Corp. in the construction of the Potomac River Bridge.

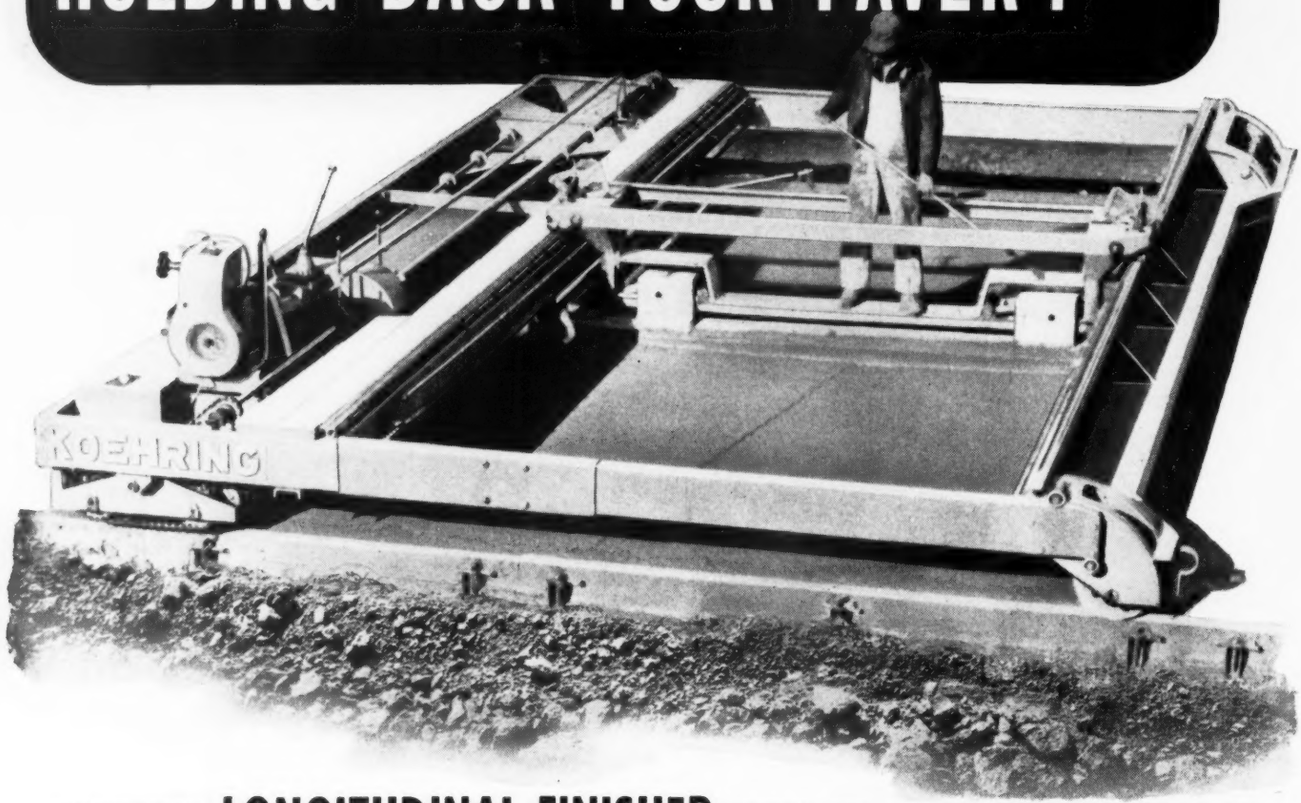
For full information on single-acting hammers, write for Bulletin 57.

McKiernan-Terry
CORPORATION

Manufacturing Engineers

14 PARK ROW NEW YORK 7, N. Y.

IS OBSOLETE HAND BULL FLOATING HOLDING BACK YOUR PAVER?



KOEHRING LONGITUDINAL FINISHER KEEPS UP WITH ANY PAVER PACE

Can you afford to hold back your paver simply because the hand finishing crew can't keep up? When, with a Koehring Longitudinal Finisher on the job, you might be laying all the concrete your paver can produce? Yes, the Koehring Longitudinal Finisher keeps right up with any paver — and offers other important advantages as well.

FINISHES WHEN SURFACE IS READY

Only the Koehring Longitudinal Finisher can finish some surfaces at the exact time when finishing should occur—after the surplus water has risen to the surface, when the concrete will no longer bleed after it has received its final finish. Hand bull floating often cannot touch harsh concrete at this stage.

EXACT COMPLIANCE WITH SPECIFICATIONS

Surfaces finished by the Koehring Longitudinal Finisher are smoother riding, wear better, because crowns are finished exactly as specified. Savings on finishing labor costs often run high.

KOEHRING COMPANY • *Milwaukee 10, Wisconsin*

KOEHRING HEAVY DUTY

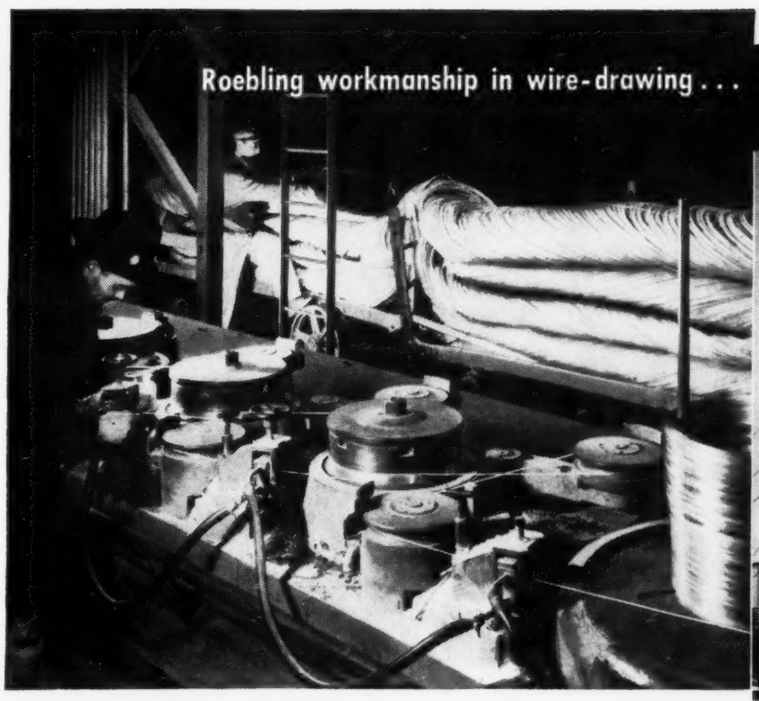
HEAVY-DUTY CONSTRUCTION EQUIPMENT

The right Wire Rope

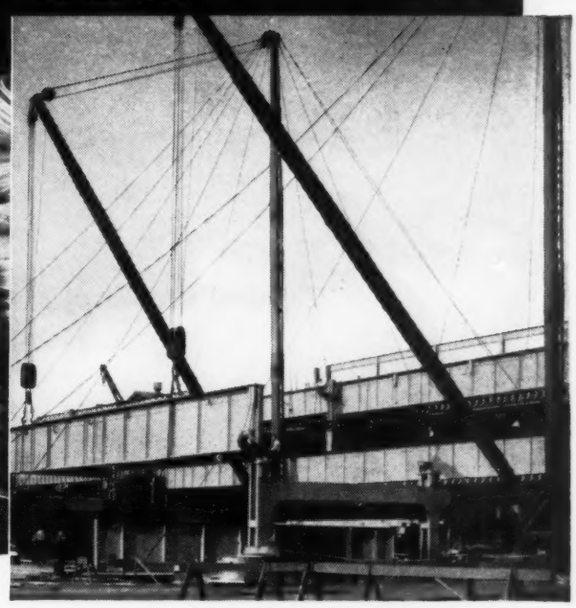
CAN HELP CUT CONSTRUCTION COSTS

Old Man Competition Is Getting Ready . . .

Roebling wire rope can help keep your costs down



means longer rope performance on the job!



TODAY, the construction business is returning to "normal" peacetime conditions. But it's far from the pre-war normal. Material costs are up. Labor costs are higher. Operating costs *must be held down*. One way to help hold them down is to specify Roebling "Blue Center" Steel Wire Rope.

Here's a *tough* rope that stands up under shocks, strains or high speeds. Specify it in the *right* construction and you'll have long-life wire rope adding efficiency to your shovels, scrapers, hoists and draglines.

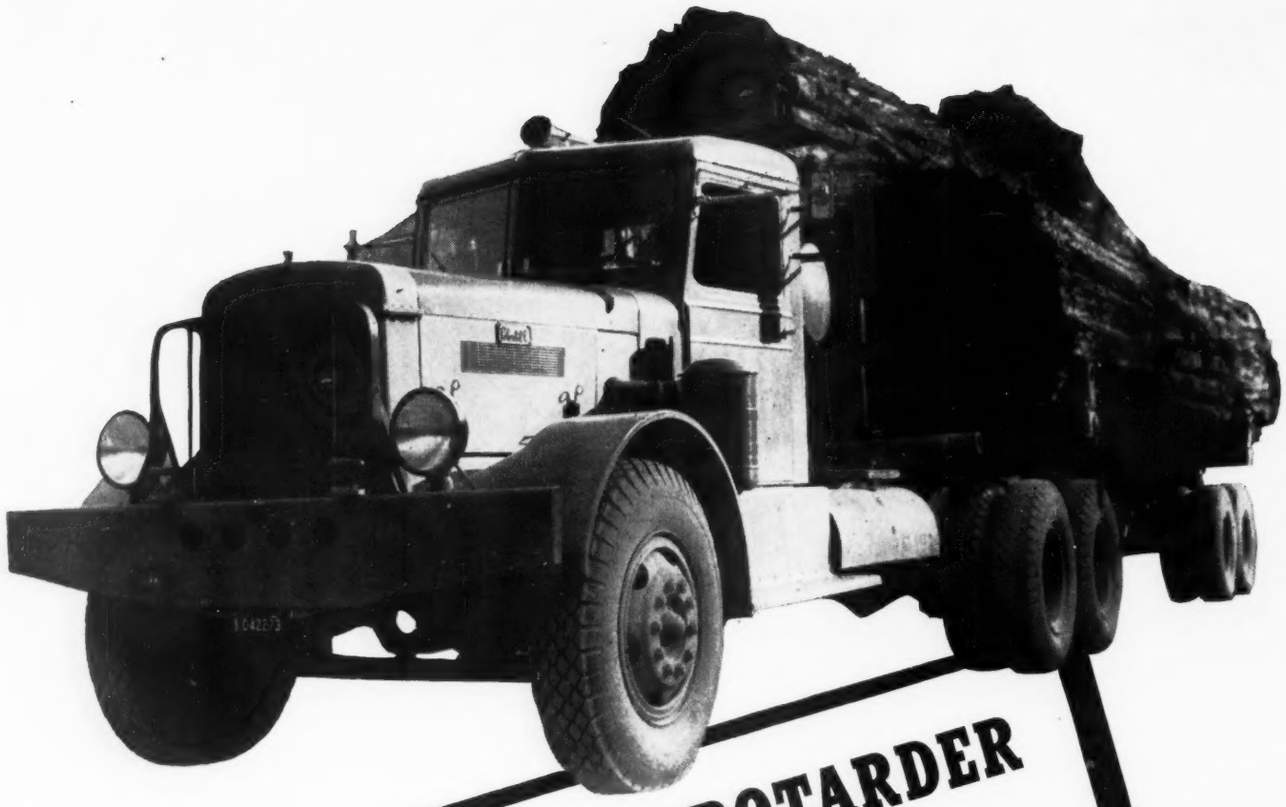
Whether your needs call for preformed or non-preformed wire rope, Roebling engineers can help you save . . . with sound advice on rope selection, installation and operation. Ask our nearest branch office about it.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON 2, NEW JERSEY
Branches and Warehouses in Principal Cities

WIRE ROPE AND STRAND • FITTINGS • SLINGS • SUSPENSION BRIDGES AND CABLES
COLD ROLLED STRIP • HIGH AND LOW CARBON ACID AND BASIC OPEN HEARTH STEELS
AIRCORD, SWAGED TERMINALS AND ASSEMBLIES • AERIAL WIRE ROPE SYSTEMS • ROUND AND SHAPED WIRE • ELECTRICAL WIRES AND CABLES • WIRE CLOTH AND NETTING

ROEBLING

PACEMAKER IN WIRE PRODUCTS



PARKERSBURG HYDROTARDER
means greater safety and lower operating costs for truck operators

Hauling heavy loads down steep grades presents two major problems of truck operation which the HYDROTARDER has solved for scores of operators.

Truck speed on down grades is controlled without the use of mechanical brakes, transmission or engine. The descent is made at a safe, uniform speed, with the truck under complete control at all times. Trucks have been able to make 25% more trips over the same route, after being equipped with Hydrotarder.

Operators have saved as much as $100.00 per month per truck, on brakes alone. Tire savings are as high as 25% with an 8% saving in fuel. The result of these savings is that Hydrotarder pays for itself in a short time . . . continues to keep your truck operating costs low . . . safety high.

Write your nearest distributor for the full and interesting story about how Hydrotarder can lick your braking problem . . . increase the number of round trips per truck while reducing operating costs.

Parkersburg HYDROTARDER

THE PARKERSBURG RIG & REEL COMPANY
PARKERSBURG, W. VA.

Manufacturers since 1931 of the famed Hydromatic Brake—the load retarder which makes possible the drilling of deep oil wells safely and economically. Its counterpart, the Hydrotarder, enables motor transportation to operate with greater safety, economy, and speed than was ever heretofore believed possible.

Distributed by

HETZEL BROTHERS
Engineers and Manufacturers
1972 Los Angeles Street, Los Angeles 11, California

THE WINTER-WEISS COMPANY
22nd and Blake Sts., Denver 2, Colorado

The Pointer-Willamette Company
238 N. E. Oregon St., Portland 14, Oregon

YOU GET ALL THESE *Profit-Earning Features*

in

FULLY CONVERTIBLE MICHIGAN MOBILE SHOVEL-CRANES

⅜ and ½ YD. SHOVELS
6 to 12 TON CRANES

WRITE TODAY FOR COMPLETE DETAILS GIVEN IN BULLETIN CM-56

TRUCK MOBILITY that cuts travel-time, reduces travel-expense between locations. MICHIGAN travels under its own power at 30 MPH speed wherever an ordinary truck can go.

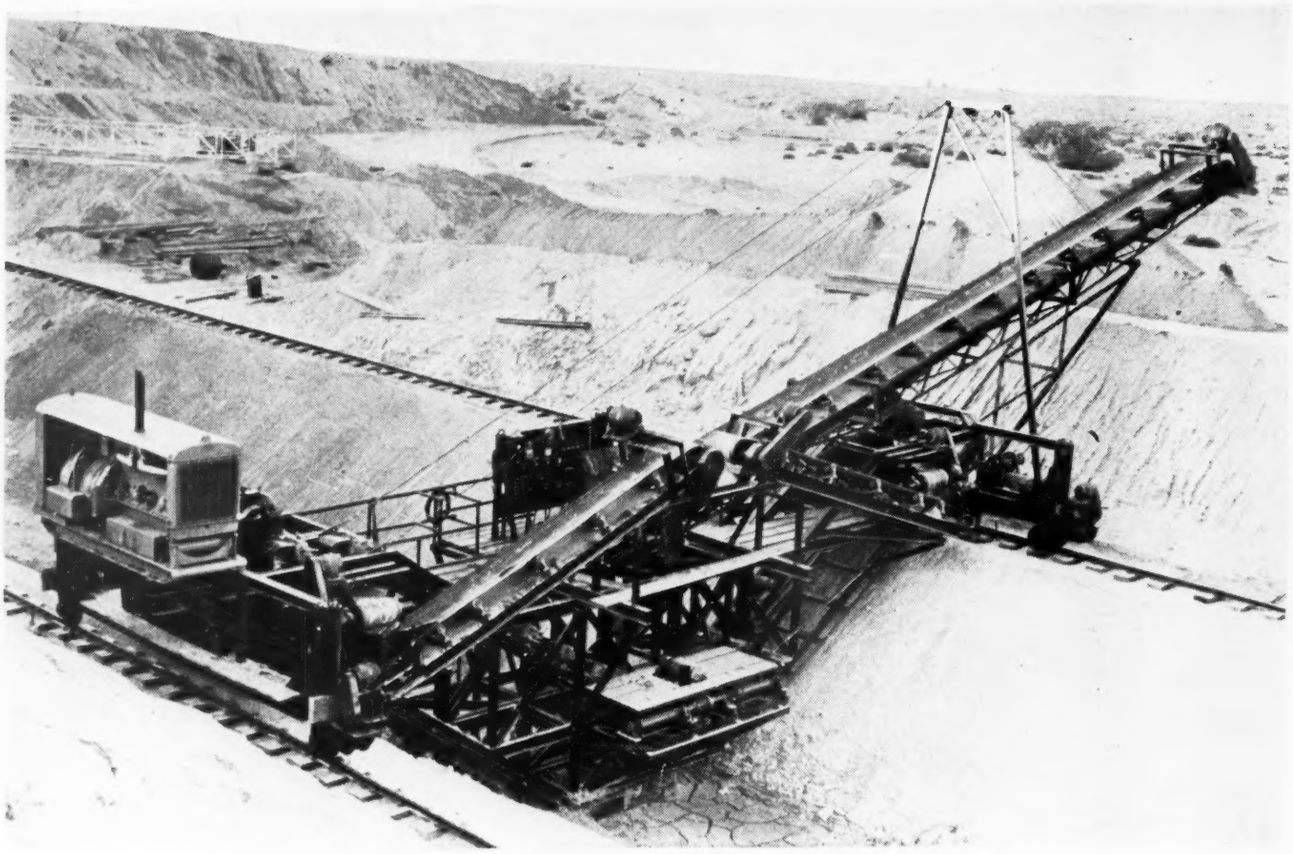
SPEED that gets every job done sooner, permits more work to be profitably handled with one machine.

OPERATING EASE that every operator likes and wants. MICHIGAN Fingertip Air Controls minimize fatigue, help maintain high production on every job.

ECONOMY that reduces operating overhead, increases profit-margins on all kinds of shovel-crane work.

LONG LIFE that makes MICHIGAN a better-paying investment and results from first-class design, materials and workmanship.

MICHIGAN
POWER SHOVEL COMPANY
BENTON HARBOR MICHIGAN



Power from a MURPHY DIESEL ME-6, 100 KW Generator Set, generates current for all the electric motors that operate the big canal sub-grader shown here, while also powering a 5 KW Transformer to provide lights for night work on the project. This unique machine is turning the last 8 to 10 inches of material from a canal in Southern California, bringing it to grade for concrete lining . . . another example of MURPHY DIESEL versatility.

Low Cost Dependable Murphy Diesel Power

THE fine records MURPHY DIESELS have made as power units on many types of construction machinery have convinced manufacturers and owners of such equipment that MURPHY DIESEL power means DEPENDABILITY.

Murphy Diesel powered rock crushers, for instance . . . and gravel plants, excavators, hoists, pumps, locomotives, lumber and logging plants, mining equipment, oil drilling rigs, work boats, and other standard heavy-duty equipment . . . have won wide acceptance among users who value dependability above all else in power units.

On many specially designed machines, too, like the big canal sub-grader shown above, MURPHY DIESELS contribute much to successful performance. Rugged; compact; easy to start in any weather; reliable performance; and economy in operation and maintenance, are reasons why heavy duty equipment new or old, powered by MURPHY DIESEL, can be depended upon for more power, more profit!

See the nearest MURPHY DIESEL dealer, or write for bulletin.

FIELD-PROVEN *Power..*

More Power
MURPHY DIESEL
More Profit

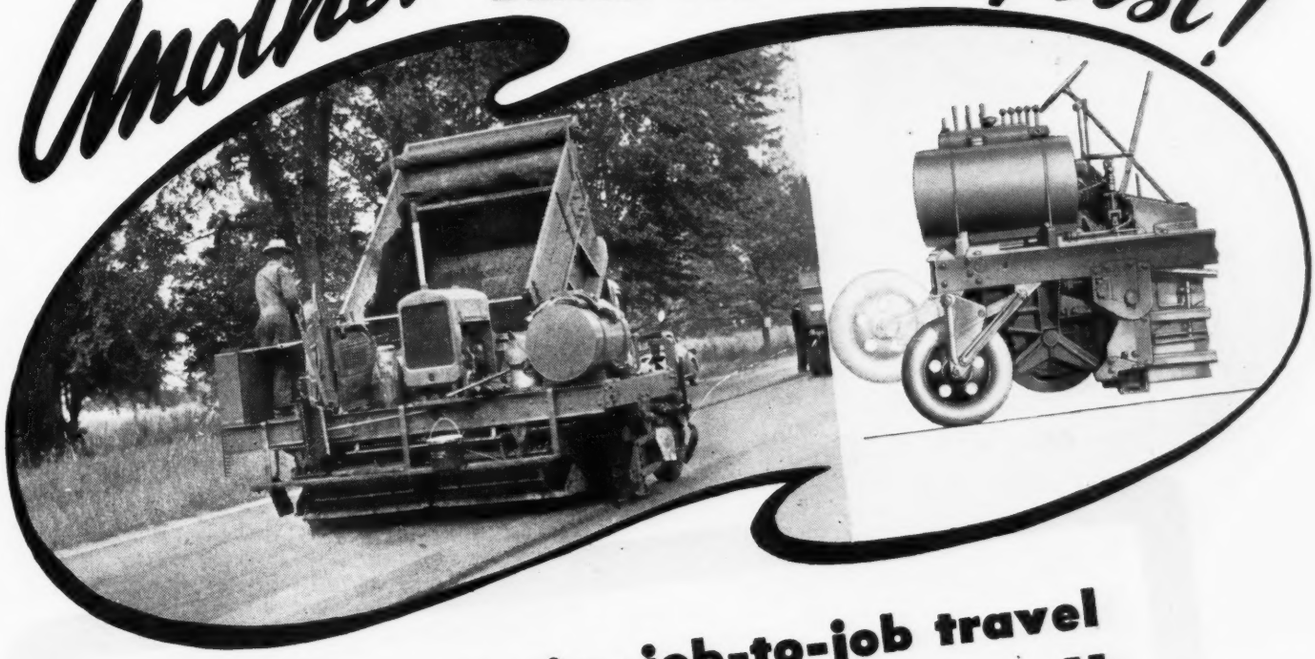
118

MURPHY DIESEL COMPANY

Engines from 90 to 215 H.P. Generator Sets from 60 to 115 K.W.

5339 W. BURNHAM STREET • • • • • MILWAUKEE 14, WISCONSIN

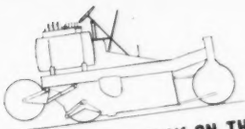
Another ADNUN BLACK TOP PAVER First!



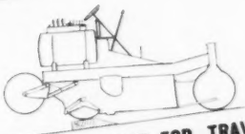
FASTER . . . Easier job-to-job travel . . . with the ADNUN Carryall

ADNUN leads again! Now between-jobs travel is a much simpler, faster operation than ever before with the Adnun Carryall. Two pneumatic, rubber-tired wheels on heavy, retractable frames lift the rear rolls clear of the ground—ready for fast towing or self-propelled travel with the powerful Adnun front-wheel drive. On the job, Adnun Carryall wheels lock up and out of the way of paving operations. Either putting the wheels down for travel or up for work is a quick, easy job. . . . Done on the spot without jacks or other special tools. Where long strips of cold material are being laid, and job conditions prevent paving in both directions, the Adnun Carryall can save hours per job in getting back—fast—to start a new strip.

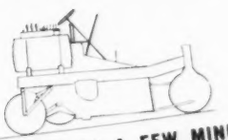
Adnun Carryalls can be quickly attached to your present Adnun Black Top Pavers, or furnished already installed on new machines. Give serial numbers of your Adnuns when ordering.



UP AND OUT OF THE WAY ON THE JOB
In retracted position, the Adnun Carryall gives plenty of clearance and is well out of the way during black top paving operations.

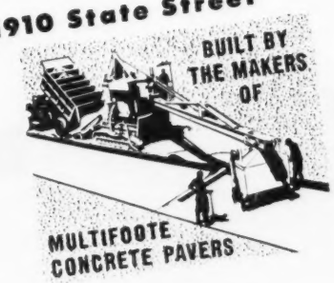


EASY TO PUT DOWN FOR TRAVELING
Just back the rolls of your Adnun onto a block, drop the Carryall wheels and insert the lock pin. . . . You're ready to travel! And no trailers or ramps are necessary.



READY TO GO IN A FEW MINUTES
There's nothing complicated about using the Adnun Carryall. . . . Only a few minutes required to put your Adnun on the job, or get it set for fast towing or self-propelled travel.

THE FOOTE COMPANY, INC.
1910 State Street **Nunda, New York**

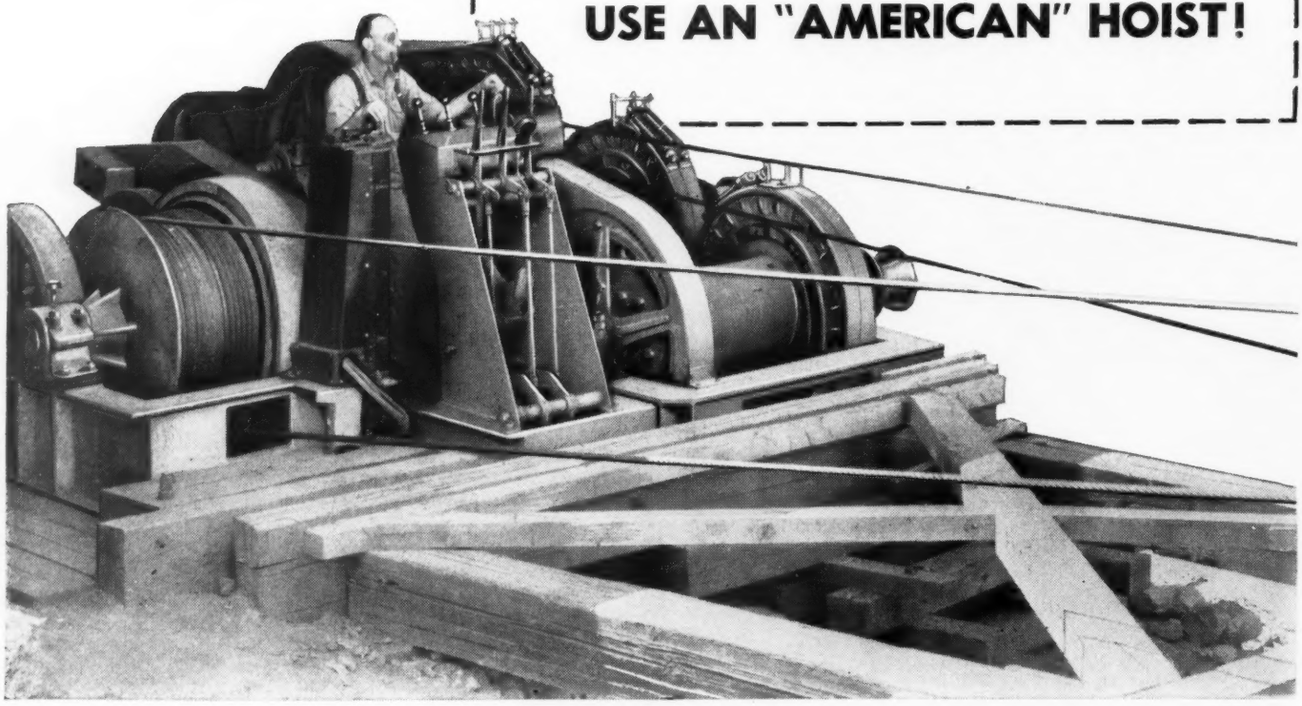


Four Army-Navy "E" Awards for Production Excellence!

ARMY E NAVY

ADNUN
TRADE MARK REGISTERED
BLACK TOP PAVER

IF IT'S A HOIST JOB - - -
USE AN "AMERICAN" HOIST!

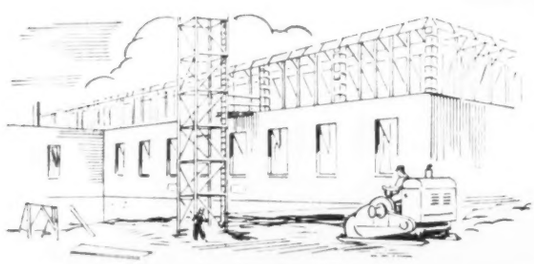


There are definite, exclusive features of "American" that make the performance of hoists outstanding above all other methods.

In its line of large capacity Air-Controlled Contracting Band Hoists, "American" has met the demand of present-day "high pressure" jobs. This equipment counters rising costs with greater speeds, more power, easier operation, hair-line accuracy and greater flexibility and safety.

Everything about these hoists is ultra-modern. Two drums will carry full-rated loads simultaneously if adequate power is supplied. Its banked lever controls, automatic safety brakes, all-welded bed frames and anti-friction drum bearings are all features of obvious value.

"American" engineers build these large hoists to specification—with one to four drums waterfalled, and for electric, diesel or steam power. Also, derricks of all types and capacities. "American" Distributors stock "American" General Purpose Hoists of 1 to 5 tons capacity.



AMERICAN
HOIST & DERRICK CO.

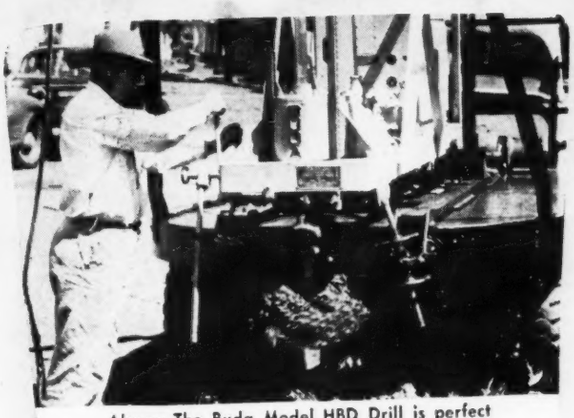
St. Paul 1, Minnesota

CHICAGO NEW YORK SAN FRANCISCO

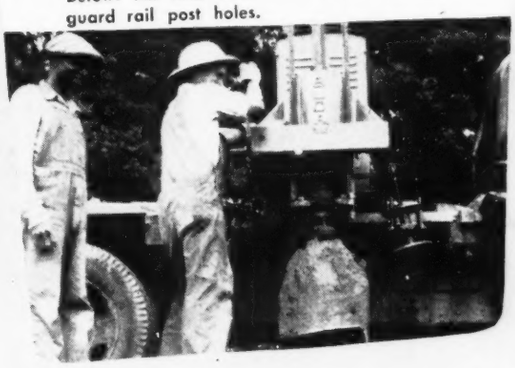
REVOLVERS LOCOMOTIVE CRANES HOISTS DERRICKS BLOCKS AND SHEAVES CROSBY CLIPS

Cash in on R. E. A. and Power Company

POLE LINE EXPANSION . . .



Above: The Buda Model HBD Drill is perfect for many drilling jobs where overhead clearance height is not of prime importance. *Below:* An HBD Drill mounted for drilling guard rail post holes.

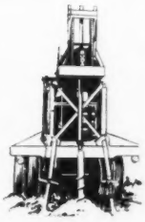


. . . with this versatile *Earth Drill*

Extensive pole line expansion programs are now in progress. You can be in a position to handle the drilling work—profitably and with speed, by adding a Buda Earth Drill to your present equipment.

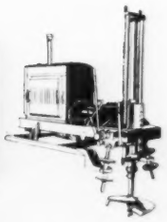
No "makeshift" rig, the Model HBE Earth Drill (illustrated above) was primarily designed for fast, low-cost post and pole hole work. Completely portable, this self-powered drill is quickly moved from job to job—and can be rapidly set up to drill. Its dependability is backed by Buda's 65 years of manufacturing experience. See your nearest distributor or write us.

Buda HBH Deep Hole Drill, for smaller diameter holes up to 100' deep. Tops for soil testing — prospecting.



BUDA

15430 Commercial Avenue
HARVEY (Chicago Suburb), ILLINOIS



Buda Model HBD Earth Drill. Rigid head. Designed and built for a wide range of construction work.

A GRIFFIN WELLPOINT JOB

6 months' deposit of river silt in the basin—

then Griffin Wellpoints were installed

the silt bottom was so dry it cracked . . .

The basin was 586 feet long and 164 feet wide, on the shore of a river. After a previous contract, the site was shut down for 6 months, the basin open to the river, which deposited a heavy silt layer. The river was closed off again with a sand dike—and pumping was started with 254 Griffin Wellpoints The Griffin Wellpoint System lowered water some 13 feet in 42 hours compared with previous record of other equipment of 96 hours! Compare Griffin performance with others—that's the convincing argument for you! Job details on request.

GRIFFIN WELLPOINT CORPORATION

MAIN OFFICE: 881 East 141st Street, New York 54, N. Y.

Equipment Leased and Sold

MID-WEST
GRIFFIN EQUIPMENT CO., Inc.
548 Indiana Street, Hammond 1662
Hammond, Indiana

SOUTH
GRIFFIN ENGINEERING CORP.
2016 E. Adams St., Jacksonville 5-4516
Jacksonville 2, Fla.

HERE'S HOW TO SPEED UP THE HIGHWAY JOB

Build your highway the Bethlehem way—by buying all your road-steel products from this single, reliable source.

Bethlehem supplies a complete line of highway steels, designed for efficient, economical installation, and built for rugged service. You'll find Bethlehem road steels dependable and easy to handle—which is one big reason why they'll help speed the job.

There's another reason, too. When you place your complete order with Bethlehem, you save yourself time and extra bookkeeping—and you get service that's co-ordinated all along the line. Shipments are scheduled to reach the job as needed, so that you'll avoid delays, and idle men and equipment.

Get in touch with the nearest Bethlehem district office—or with Bethlehem Steel Company, Bethlehem, Pa.—for full information about efficient, time-saving Bethlehem road steel service.

BETHLEHEM PRODUCTS FOR HIGHWAYS

Road Joints • Center Strip • Dowels Dowel Bar Supports • Reinforcing Bars Bar Mats • Bar Ties • Reinforcing for Concrete Pipe • Bridge Floor Reinforcing Concrete Slab Spacers • Welded Wire Fabric Guard Rails • Guard Posts and Brackets Wire Rope and Strand • Right-of-Way Fence and Posts • Anchor Rods • Pipe Hollow Drill Steel • Digging Bars • Structural Steel • Corrugated Sheets • Turnbuckles • Tie Rods, Spikes, Bolts and Nuts • Timber Bridge Hardware • Sheet and H-Bearing Piling

★ BETHLEHEM STEEL ★

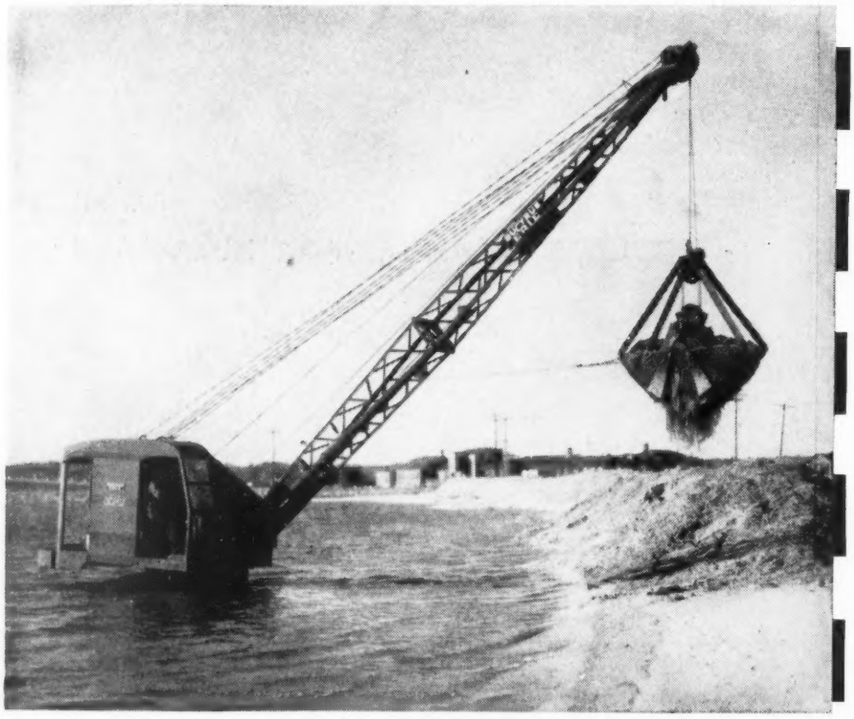
The road joint shown above was designed and produced by Bethlehem for heavy traffic at New York City's big Idlewild airport.

no time out for wet feet

IT'S characteristic of Bucyrus-Erie 3/8 to 2½-yard excavators to wade right in and slug it out with the tough jobs — staying in there digging, shift after shift, delivering the high percentage of actual working time that really boosts output.

you make the most of EVERY HOUR with a BUCYRUS-ERIE

YOU ADD EXTRA OUTPUT WITH THE EXTRA DIGGING TIME BUCYRUS-ERIES GIVE YOU



Here are 8 reasons why

1. All adjustments are easily made and lasting.
2. Parts are simple, large, few in number and enduringly aligned — there's little to go wrong.
3. Machinery is accessible for quick, easy repairs, parts replacement, and lubrication.
4. The digging cycle is balanced, coordinated, fast. There's no overstressing of parts to cause too-frequent adjustments and repairs.
5. All controls are conveniently grouped in one place — no hopping about the machine to cause digging delays.
6. Performance is smooth, quiet — easy on both machine and operator.
7. Design is individual — each machine is especially fitted to its range of work.
8. Moves are fast, sure. Machine is easily steered, makes sharp or gradual turns, climbs grades to 30%.

52E46

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

DESPERATELY NEEDED construction projects, repair jobs long overdue, great expansion programs—these need hardworking tools. That's why cost-minded and time-crowded men are picking Barco Portable Gasoline Hammers. For the lightweight, powerful Barco can lick any job of breaking, drilling, driving, tamping. Today, Barco is more in demand than ever before because it enables one man to do more work in less time...with less effort. Let us send you complete particulars. Barco Manufacturing Co., Not Inc., 1812 Winnemac Avenue, Chicago 40, Illinois.

BARCO

Portable Gasoline HAMMERS

FREE ENTERPRISE — THE CORNERSTONE OF AMERICAN PROSPERITY

Packed with PULL

—and tough as they come!

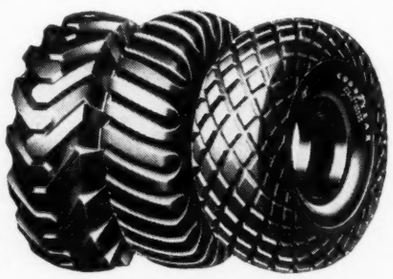
ON drive wheels where traction is a must, top tire honors go to this high-hour performer — Goodyear's Sure-Grip Earth Mover. It packs pulling power like no other work tire, for its *open center* self-cleaning tread keeps those husky lug bars *completely* separate — enables *each* one to bite in deep, take firm grip with minimum slip, pull sure and steady in *any* going.

And tough? This husky is armored with Rayotwist —Goodyear's super-strong rayon cord—*which makes the toughest body we've ever built into a work tire.*

How do this and the other Goodyear work tires measure up to the toughest jobs in low cost and long life? Year after year, *more yards are moved on Goodyear off-the-road tires than on any other kind!*

THE RIGHT TIRE FOR EVERY JOB

1. **SURE-GRIP EARTH MOVER** for drive wheels and maximum traction
2. **HARD ROCK LUG** for all rock work
3. **ALL-WEATHER EARTH MOVER** for drawn vehicles and general traction



1 2 3

BUY and SPECIFY GOODYEAR —it pays!

Sure-Grip, Rayotwist, All-Weather—T.M.'s The Goodyear T. & R. Co.

GOODYEAR

THE GREATEST NAME IN RUBBER

Construction Methods

WALDO G. BOWMAN, Editor

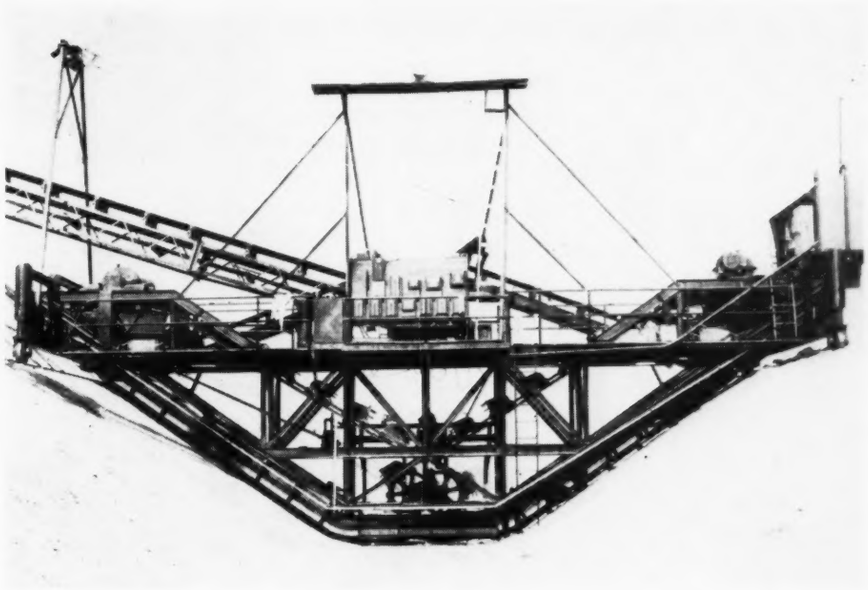
Volume No. 28 | MAY, 1946 | No. 5

SPECIAL MACHINES Speed Canal Paving

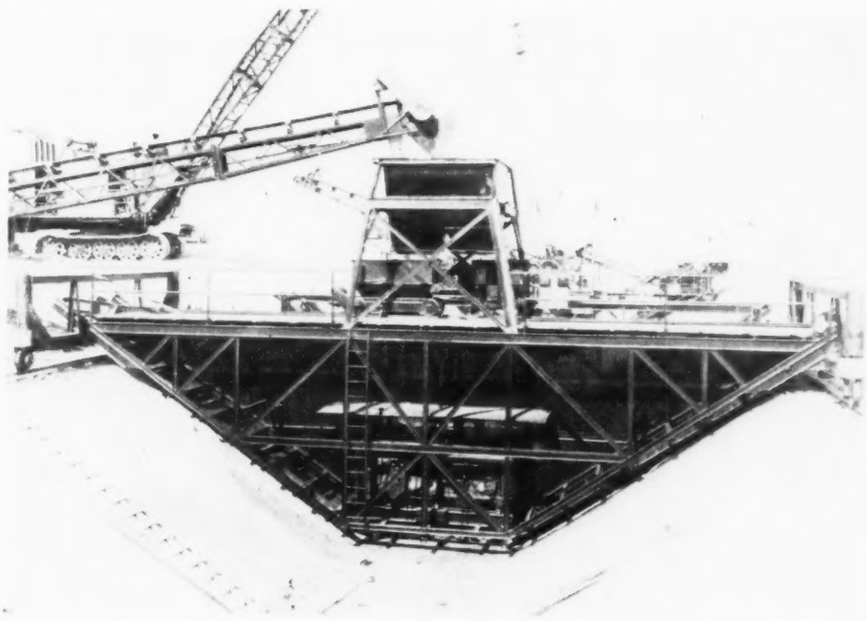
HAND LABOR is reduced to a minimum by J. F. Shea Co., Inc. in trimming and paving a section of the Coachella Canal near Mecca in southern California.

A special trimming machine, operating on tracks along the top of the cut, simultaneously trims the canal bottom and both banks to the required contour by buckets on an endless chain. Spoil is discharged from the trimming buckets on to conveyor belts carried by the machine and is disposed of alongside the canal. The trimmer is electrically operated and depth of cut is regulated by hydraulic cylinders at track wheel supports.

An electrically operated paving machine, riding the same tracks as the trimmer, pours the canal cross-section. Concrete from 4-cu. yd. transit-mix trucks is carried by belt conveyor to a hopper on the paver, and in turn is discharged into a hopper car. The car, riding on transverse tracks on the paver deck, is able to dump the concrete at the desired point in the canal section. The paver vibrates the concrete and then screeds it with the template forming the front end of the machine. A diesel-powered generator mounted on the paver frame supplies electricity for machine operation.

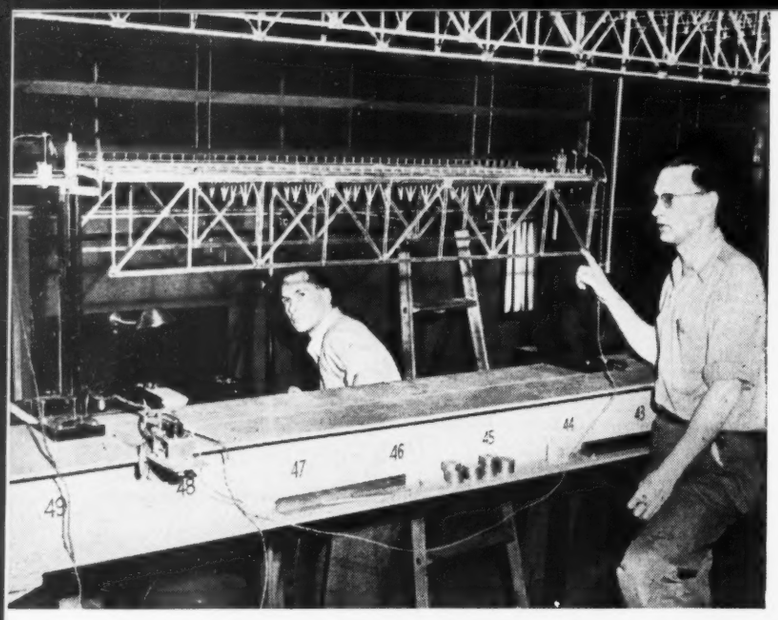


CANAL TRIMMING MACHINE, used by J. F. Shea Co., Inc., on construction of Coachella Canal, grades to correct cross-section and discharges spoil alongside canal.



CONCRETE LINING for canal is placed, vibrated and screeded by electrically-operated paver following in wake of trimmer.

THIS MONTH'S NEWS REEL



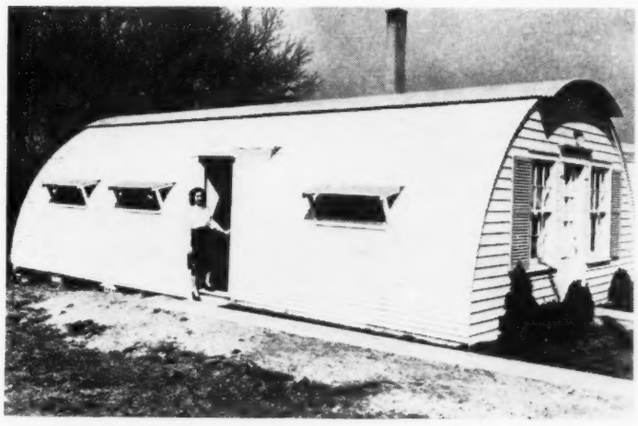
NEW TACOMA NARROWS BRIDGE over Puget Sound will be twice as wide and have towers 40 ft. higher than its predecessor, world's third largest suspension span, which collapsed in 1940. Oscillations of small section of plastic model of proposed replacement are recorded in laboratory at University of Washington.
Wide World Photo

RUSSIANS ERECT steel frame (below) for new factory in Kazakh, one of sixteen Soviet Socialist Republics, which extends from lower Volga and Caspian shore to border of China. Sovphoto

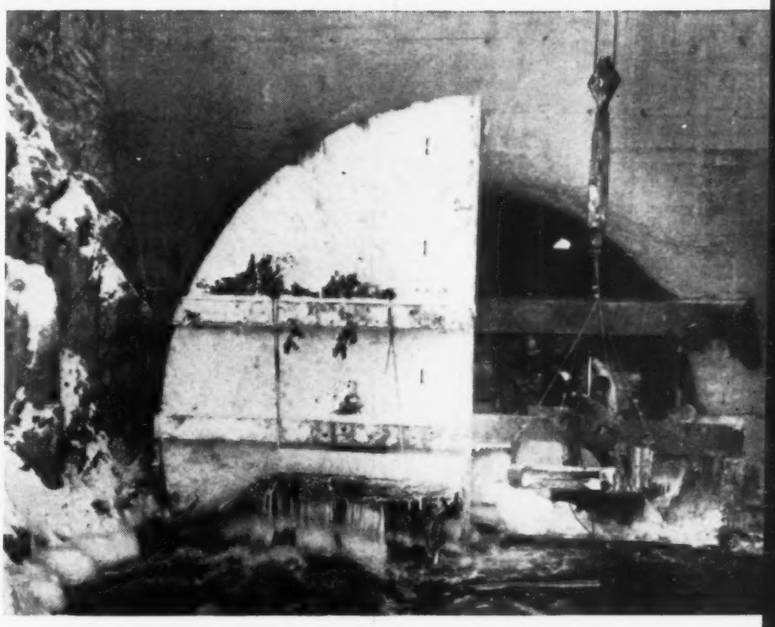
BIDS ARE OPENED for construction of three schedules on Friant-Kern Canal in California. Representing U. S. Bureau of Reclamation are (left to right): LOUIS E. CRAMER, office engineer; R. K. DURANT, acting construction engineer; G. W. WITTE, chief clerk, and G. H. HOGUE, engineer. B. D. Glaha Photo

BAILEY TRUSSES (below), used extensively by Army Engineers in war theaters, close 240-ft. gap in Grace Bridge over Cooper River at Charleston, S. C., which was rammed by freighter. Traffic can cross temporary span, which is supported by prefabricated steel tower, while permanent repair work proceeds underneath. Emergency spans were erected by Tidewater Construction Corp. for South Carolina Highway Department.

UNITED NATIONS GENERAL ASSEMBLY will meet in New York City Building, Flushing Meadows, shown behind circle on which Trylon and Perisphere stood during 1939 World's Fair.
Press Assoc. Photo

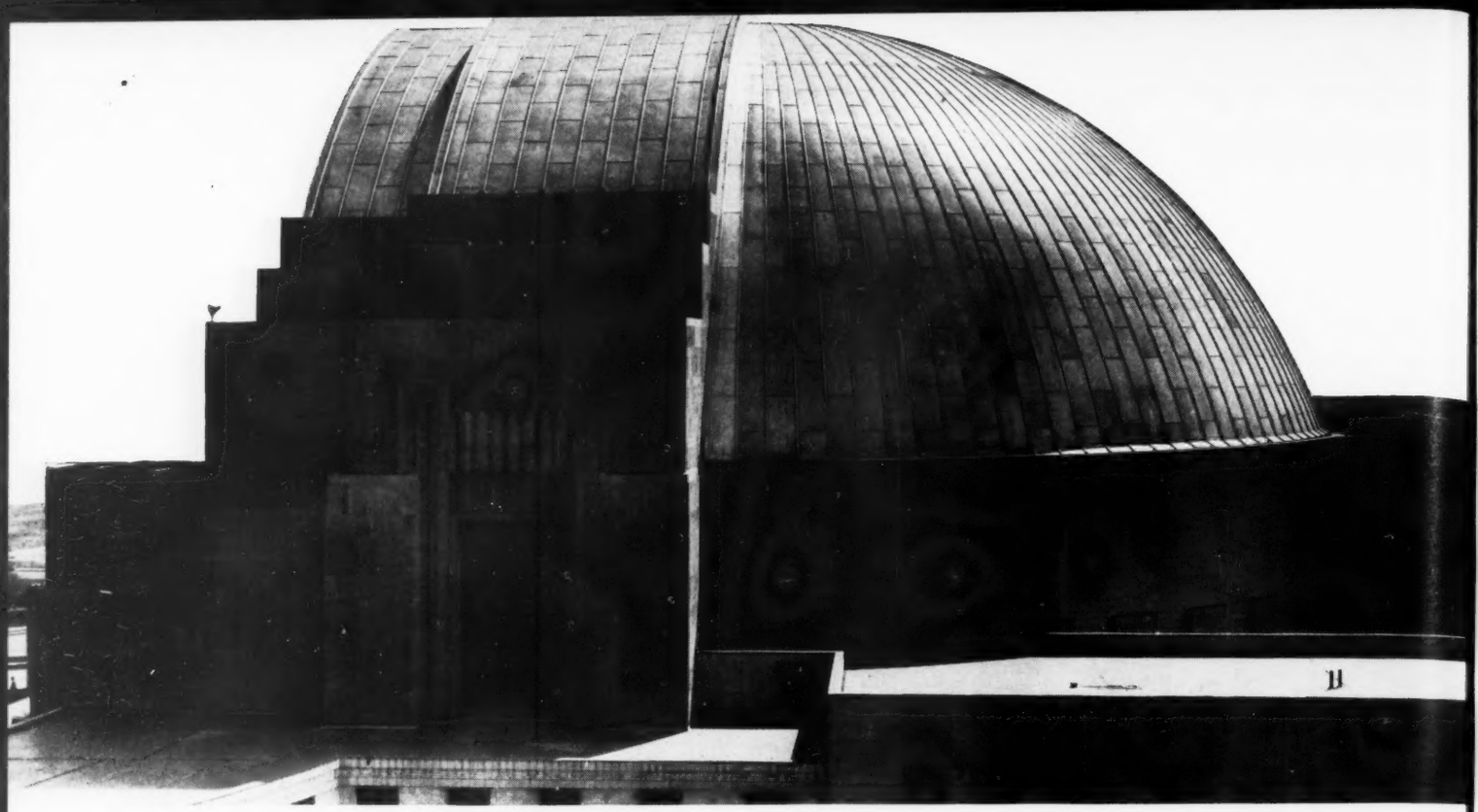


QUONSET HUT is converted to civilian use by dividing interior space into five rooms and bath. Manufactured by Great Lakes Steel Corp. Stran-Steel Division, Detroit, Mich., with interior finished by Building Products Co., Grand Rapids. 20x36-ft. house costs less than $2,000.
Wide World Photo



WORKERS ON ANDERSON RANCH DAM prepare to attach second half of 13-ton wooden flap gate to seal off old diversion tunnel. Gate, composed of 12x12 timbers, will serve until concrete plug is in place. Reservoir will ultimately store 500,000 acre-feet of water. This U. S. Bureau of Reclamation structure on South Fork Boise River in southwestern Idaho is world's highest earthfill dam.

U. S. NAVAL HOSPITAL (below) at Houston, Tex., approaches completion on 125-acre site donated to Navy by city. James Stewart & Co. is contractor for 1,000-bed institution, estimated to cost about $8,000,000, and Comdr. J. T. Riordan is officer in charge of construction for Bureau of Yards and Docks. Associates responsible for design comprise Alfred C. Finn, architect; Robert J. Cummins, structural engineer; and Reginald Taylor, mechanical engineer, all of Houston.



SEMI-DOME, with barrel-arch or semi-cylindrical extension to facade of structure, forms curved roof of Cincinnati's Union Terminal newly resurfaced with preformed aluminum sheets to replace original ribbed terra cotta tile placed when structure was built in 1932-33.

ALUMINUM ROOFING

of Preformed Sheets

Replaces Tile on Curved Surface of

Railroad Terminal Dome

PREFORMED TO FIT the curved surfaces of the half-dome and barrel arches covering the main body of the Union Terminal at Cincinnati, Ohio, aluminum sheets of 14 gage, ranging in size up to 52x120 in. and involving a total of 1,123 panels covering an area of 32,000 sq.ft., have been installed to replace the original ribbed terra cotta tile with which the roof of the structure was originally surfaced 13 years ago. Accurately tapered to insure precise fitting as the lines of panels converged toward the top of the dome, the aluminum sheets, bedded on insulating layers of felt

PREFORMED TO FIT CURVED SURFACE of roof (below), aluminum sheets and extruded shapes are grouped to facilitate rapid and orderly installation.

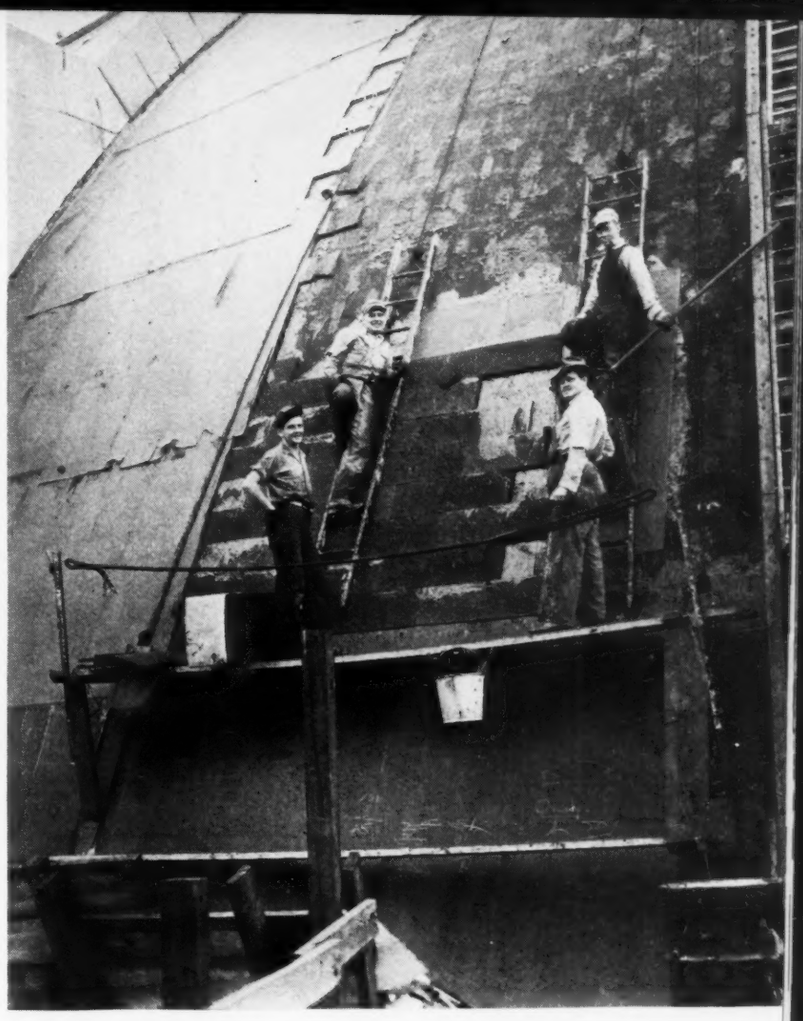
J. H. GOODWIN (below), chief engineer of Overly Mfg. Co., and developer of batten type of roofing used on Cincinnati Terminal, checks extruded bar cross-section with shop foreman.

and cork, were anchored by bolts to the concrete base upon which the old roofing had been applied. Special scaffolding was devised to facilitate the handling and placing of the new lightweight panels on the curved surfaces of the roof. The weight of the new aluminum roof surfacing is only about one-twentieth that of the original terra cotta tile which, it was decided, needed replacement.

As originally built in 1932-33 by James Stewart & Co. from designs by Fellheimer & Wagner Associates, New York architects, the terminal structure's semi-dome and barrel-arch or cylindrical extension consisted of a steel frame of eight parallel arch trusses, mainly of H-section members and having spans varying in length from 209 to 67 ft. 8 in. to fit the curved contour of the dome. The spacing of the trusses ranges from 27 to 11 ft. Purlins and ceiling beams connect the trusses, the purlins being inclined to keep within the curve of the roof. The transverse radius of the roof ranges from 104 ft. 5 in. at the first barrel-arch truss near the facade of the terminal to 59 ft. 6 in. for the rear truss of the semi-dome. The longitudinal radius of the dome is 102 ft. for the roof and 89 ft. 6 in. for the ceiling of the terminal structure.

The roof framing carries a 5-in. thick concrete slab, reinforced with wire mesh and covered with a three-ply felt waterproofing upon which the original surfacing of terra cotta tiles was placed. In its original form the dead loads of the roof included 25 lb. per sq. ft. for the tile and 50 lb. per sq. ft. for the concrete. The new aluminum sheets impose a dead load of only about 1¼ lb. per sq. ft.

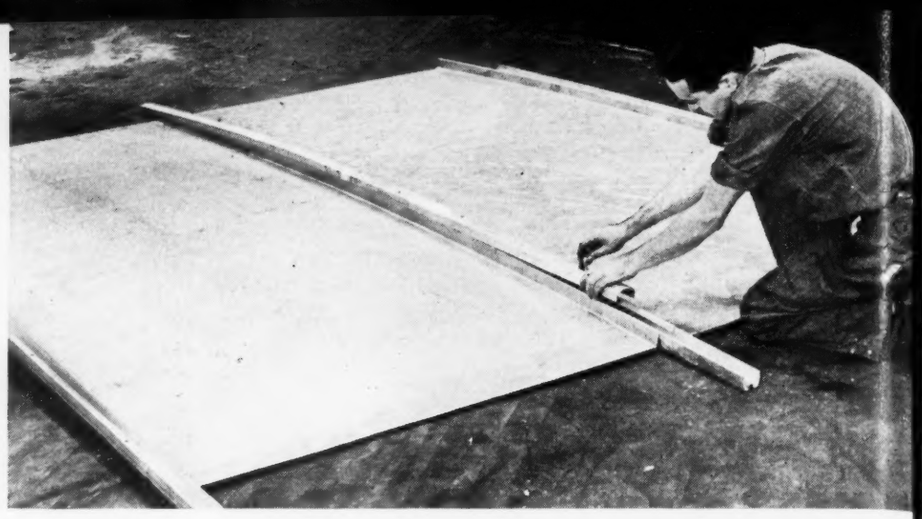
When it became apparent that the roofing on the dome, barrel-arch extensions and parapet walls would need replacing, the Union Terminal Co.'s engineers began a study of the various available roofing materials—a study which led to the conclusion that



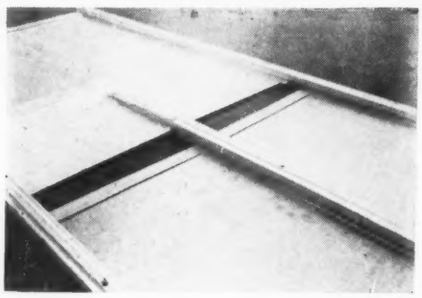
CORK INSULATION PANELS 1 in. thick are applied to mopped surface of original layer of 30-lb. felt covering surface of 5-in. thick mesh-reinforced concrete base covering steel framework of roof.

STEPPED SCAFFOLD (below) assists workers in placing preformed aluminum sheets on roof of dome. Sheets are tapered to insure precise fit as lines of panels converge toward top of dome.

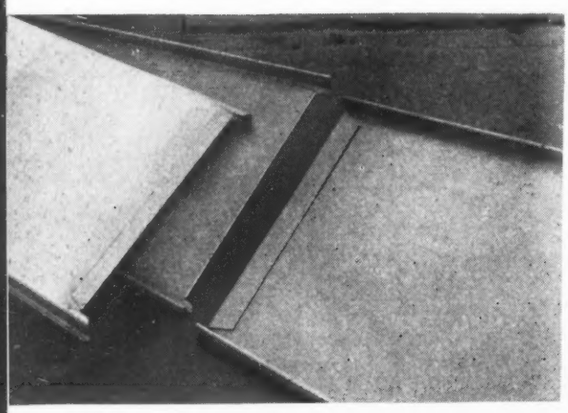
BATTEN TYPE OF ROOFING requires extruded aluminum bar and cap anchored to base by bolts.



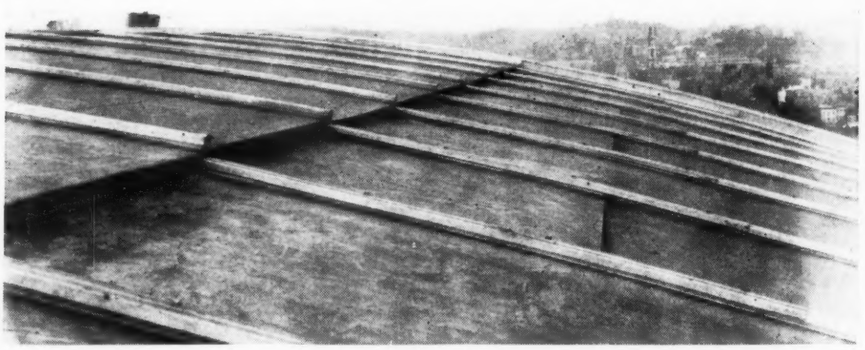
MATCHING OF SHEETS and checking fit with battens and caps are done at manufacturing plant prior to shipment to job.



← **VIEW OF HORIZONTAL JOINT** shows where one batten ends as material nears top of dome-shaped roof.



ENDS OF ADJACENT SHEETS are here shown lined up preparatory to forming horizontal joint. Note scarfing on bottom edge of sheet adjacent to where it hooks on batten. Sheet at extreme left has been turned upside down to show details of forming.



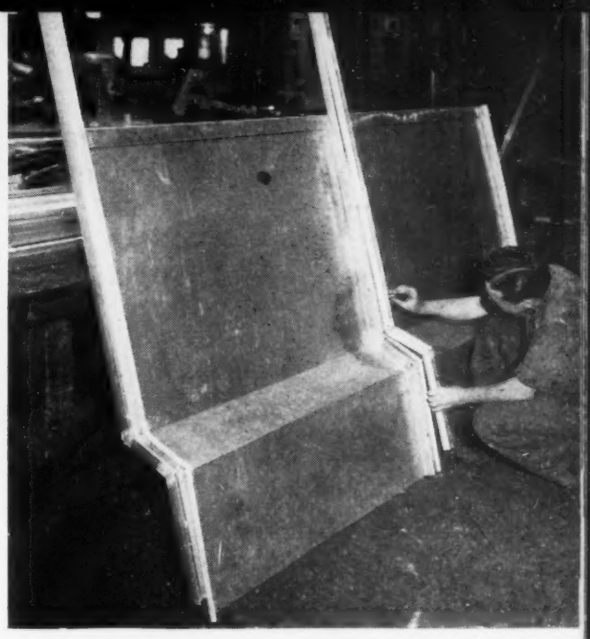
BATTENS of extruded aluminum are anchored by bolts to concrete roof base and are capped to hold the aluminum sheets in place.

aluminum might well provide the best solution to the problem. A consultation was held with the architectural division of Aluminum Company of America to determine the exact needs of the roof. Then the Overly Manufacturing Co. at Greensburg, Pa., was consulted regarding the possibilities of using its batten style aluminum roofing, known as the Goodwin batten. This type of roofing is prefabricated, simple to construct and easy to erect. Besides meeting all requirements of weather resistance and low maintenance costs, such a roof is extremely light in weight, weighing approximately 1/20 as much as the nonmetallic roof previously used on the terminal.

With the exception of the flat areas where $\frac{1}{8}$-in. aluminum sheet was used, the entire dome-shaped roof, barrel-arches and parapet walls were covered

← **ALUMINUM SHEETS** are here in place on barrel arches and parapet walls. At right, battens and sheets have been anchored to roof base from special scaffolding.

EDGES OF ROOFING SHEETS are crimped in 100-ton press to overlap battens and insure tight joints.



ANGLE CONTOURS of aluminum sheets and battens are carefully checked in shop to insure accurate fit before shipment to job.

with 14-gage aluminum sheet. Because of the contour of the dome-shaped area, it was necessary for each section of sheet to be tapered to insure precise fitting as the sections converged toward the top. In addition to the preformed aluminum field sheets, approximately 11,500 lin. ft. of extruded aluminum batten and cap was used. Alcoa alloy 53S was employed for the extruded sections. The sheets were formed of Alcoa alloy 3S-½H

Aluminum Sheets Prefabricated

Prefabrication of the aluminum sheets at the Overly plant in Greensburg, Pa., simplified the job of erection. Extruded battens and caps ranged from 6 ft. 6 in. to 20 ft. in length. In order to handle the problem of roof expansion and contraction, which is considerable in a roof of this type, it was necessary to stagger all joints so that each joint on each bar was offset in order to prevent leakage.

Prior to installation of the aluminum roof it was necessary to remove the old roof and to prepare the underlying structure for the new surface. The 5-in. thick concrete slab forming the base for the old roofing was left in place as was the layer of 30-lb. felt. Repairs to the existing felt layer were made where necessary and over it a 1-in. layer of Armstrong cork was mopped on, followed by another layer of 30-lb. felt. Over the last layer of felt a layer of 15-lb. asbestos felt was placed, with the outer surface dry. The 1-in. layer of cork is said to develop approximately the same value of insulation as the previous roofing developed.

In order to anchor the aluminum sections in place, holes were drilled through the felt and cork and approximately 1½ in. or more into the concrete for insertion of Cinch Anchor expansion shields. After the holes were drilled and the expansion shields placed, they were filled with an Alumelastic calking compound prior to placing anchor bolts. The roof plug anchor bolts were spaced at intervals of 22 in. as were the cap bolts. Slots were cut in the battens to permit sliding during expansion and contraction.

The curved shape of the roof imposed a major structural problem. Each section of aluminum bar, batten and sheet had to be pre-curved to a slight degree to meet the shape of the sectional arc. This preforming and curving was done in the

(Continued on page 169)

ASSEMBLY OF TYPICAL ROOFING UNITS shows two aluminum sheets with crimped edges to fit over sides of batten over which channel-shaped cap is placed and anchored by bolts to concrete base of roof.

RE-ROOFING OF TERMINAL involved placing aluminum sheets on curved surfaces of semi-dome (at rear) and cylindrical or barrel arches of two sizes extending to facade of structure.

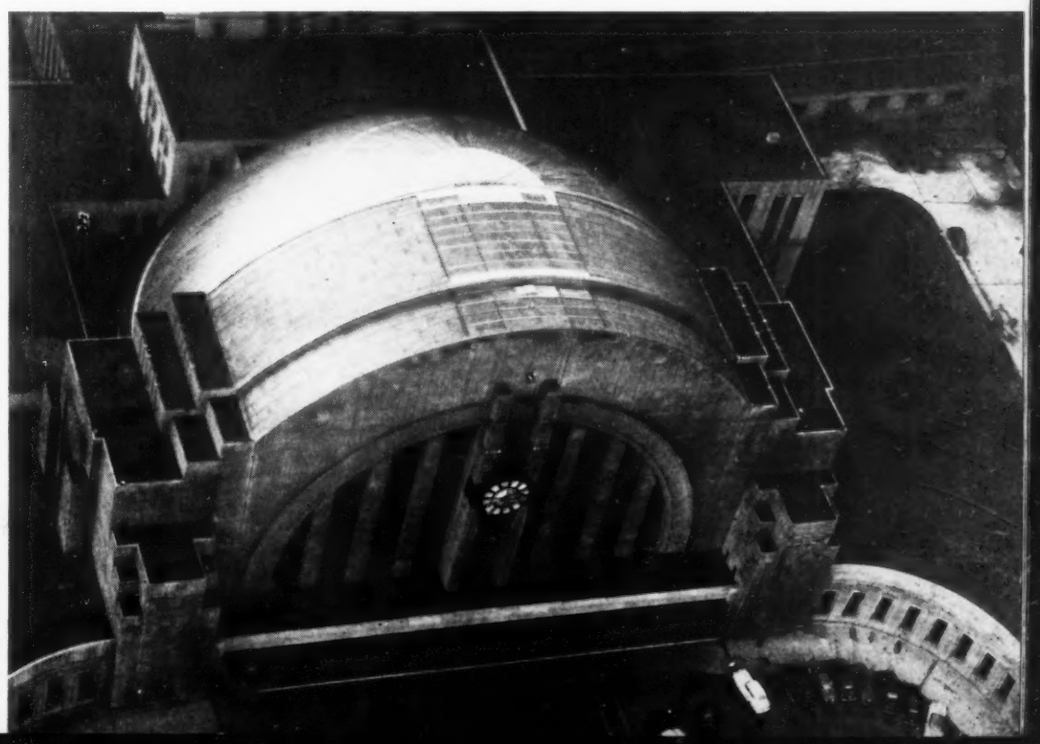


FIG. 1 . . . FIFTY-THREE YEAR OLD BRIDGE at Scranton, Pa., comprising six Pratt through-truss spans and one deck span over stream, was strengthened to carry 15-ton truck loads and eliminate vibration.

Bridge Floor Strengthened by

Arc-Welded Spiral Rods

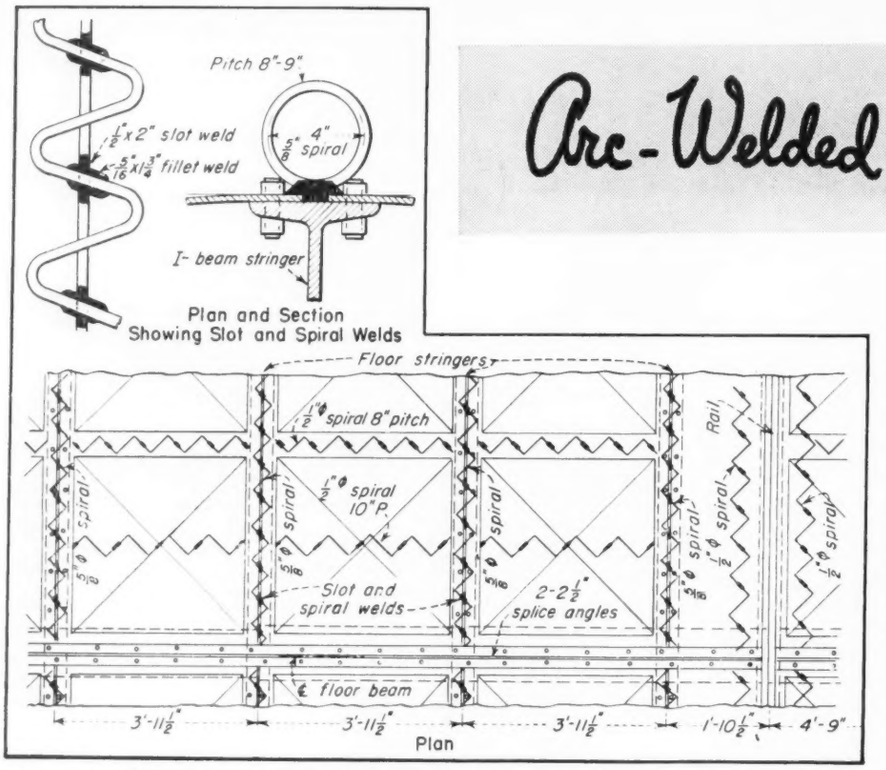


FIG. 2 . . . DETAILS OF FLOOR REINFORCEMENT show welded steel spirals, later embedded in concrete slab.

STRUCTURAL REINFORCEMENT applied with the aid of arc-welding has eliminated excessive vibration in the Spruce St. Bridge at Scranton, Pa., and, at a cost of $43,000, has enabled the 53-year-old structure of seven truss spans to carry safely 15-ton truck loads instead of the 6-8 ton vehicular loadings to which the bridge had been restricted because of an apparent weakness of the floor system. Built in 1893, the bridge carries a main highway over the Lackawanna Railroad and Roaring Brook. It consists of six Pratt through-truss spans, each about 106

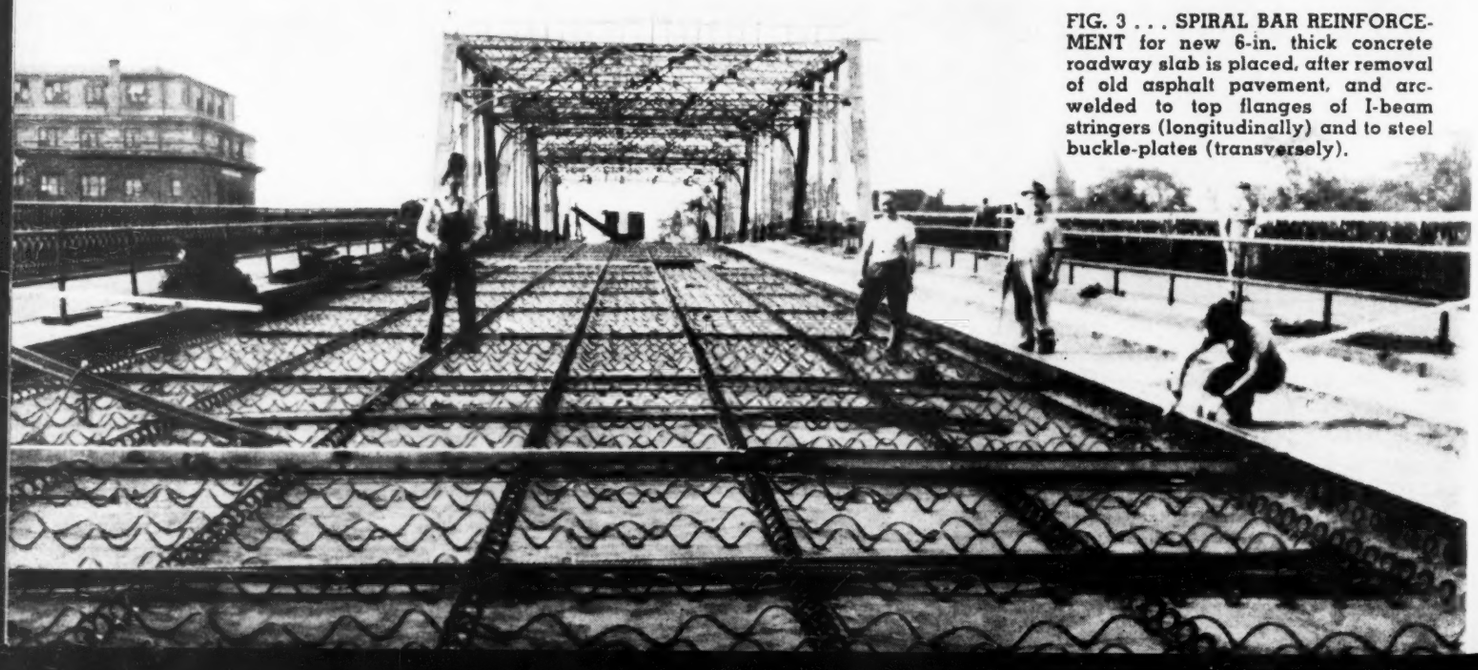


FIG. 3 . . . SPIRAL BAR REINFORCEMENT for new 6-in. thick concrete roadway slab is placed, after removal of old asphalt pavement, and arc-welded to top flanges of I-beam stringers (longitudinally) and to steel buckle-plates (transversely).

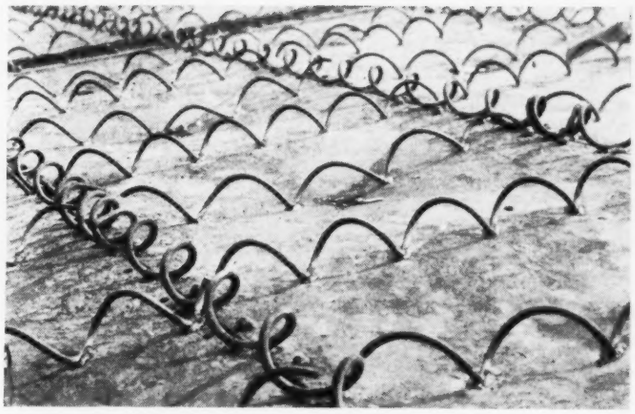


FIG. 4 . . . ARC-WELDED CONNECTIONS tie transverse reinforcing spirals to buckle-plates of bridge floor system and longitudinal spirals to top flanges of I-beam stringers.

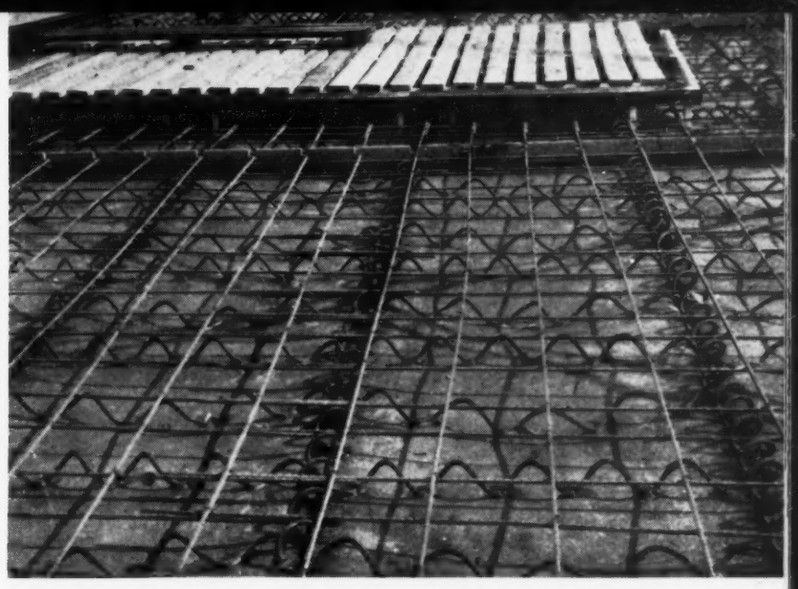


FIG. 5 . . . IN ADDITION TO SPIRALS, transverse and longitudinal reinforcement with ½-in. round straight steel bars provides for shrinkage and thermal changes.

ft. in length, and one 210-ft. deck span over the stream. For the project of rehabilitating the bridge A. Burton Cohen, of New York, served as consulting engineer; the contractors were Harrison & Burrowes, Inc., of Jersey City, N. J. The following notes on how the work was handled are based on information supplied by the Lincoln Electric Co., Cleveland, Ohio, manufacturer of arc-welding equipment.

The bridge trusses, as illustrated in Fig. 1, are supported on steel towers 8 to 10 ft. in width. The roadway, 37 ft. wide includes a single-track street car line along the easterly curb. Two 8-ft. sidewalks are cantilevered from the trusses. The floor beams, at panel points, are spaced on 17 to 21 ft. centers, except on the deck span over the brook, where the spacing is 10 ft. Longitudinal I-beam stringers, spaced 3 ft. 11½ in. on centers, rest directly on the floor beams.

In spite of the fact that the bridge had been posted for load restriction, there was a noticeable vibration of the trusses when restricted loads passed over the structure. This vibration was caused by the corrugated roughness and extensive disintegration of the pavement, composed of 3 in. of asphalt laid on a dry concrete cushion laid directly on ⅜-in. buckle-plates which were bolted to the stringers. Many of the bolts were loose and some were missing. The general lack of rigidity of the floor system was the cause of the vibrations that disintegrated the pavement.

Assuming that the bridge had the proper strength, the city was faced primarily with the expense of replacing the pavement. A preliminary analysis showed the stringers to have the precariously low carrying capacity of 6- to 8-ton vehicular loading, a condition that did not warrant stiffening repairs to the buckle-plates in order to replace the pavement. Then followed the imperative consideration of structural reinforcement of the bridge.

An effective application was made of the Alpha system of composite floor design using spiral bars to reinforce concrete slabs shown in Fig. 2. The old pavement was removed and replaced by a 6-in. thick concrete paving slab to act as the flange of a composite T-beam with the I-beam stringers, the lines of which are marked by the longitudinal

BREAKDOWN OF COST

The major items in the $43,000 cost of strengthening and repairing the bridge floor system and pavement, as broken down by A. Burton Cohen, consulting engineer, of New York, are tabulated below.

Removing old pavement	$ 6,800
Spiral reinforcement	20,400
Angle iron reinforcement of floor beams of deck span	3,000
Concrete pavement	10,000
Painting and drains	1,500
Expansion joints	1,300
TOTAL	$43,000

Cost of floor reinforcement, covering area 37 ft. wide and 792 ft. long (29,304 sq. ft.) totaled $23,400, or 80c. per sq. ft.

FIG. 6 . . . CONCRETING OF PAVEMENT is done from sectional wood platform. Two-wheel buggies pour mix delivered by 3-cu.yd. transit-mix trucks.

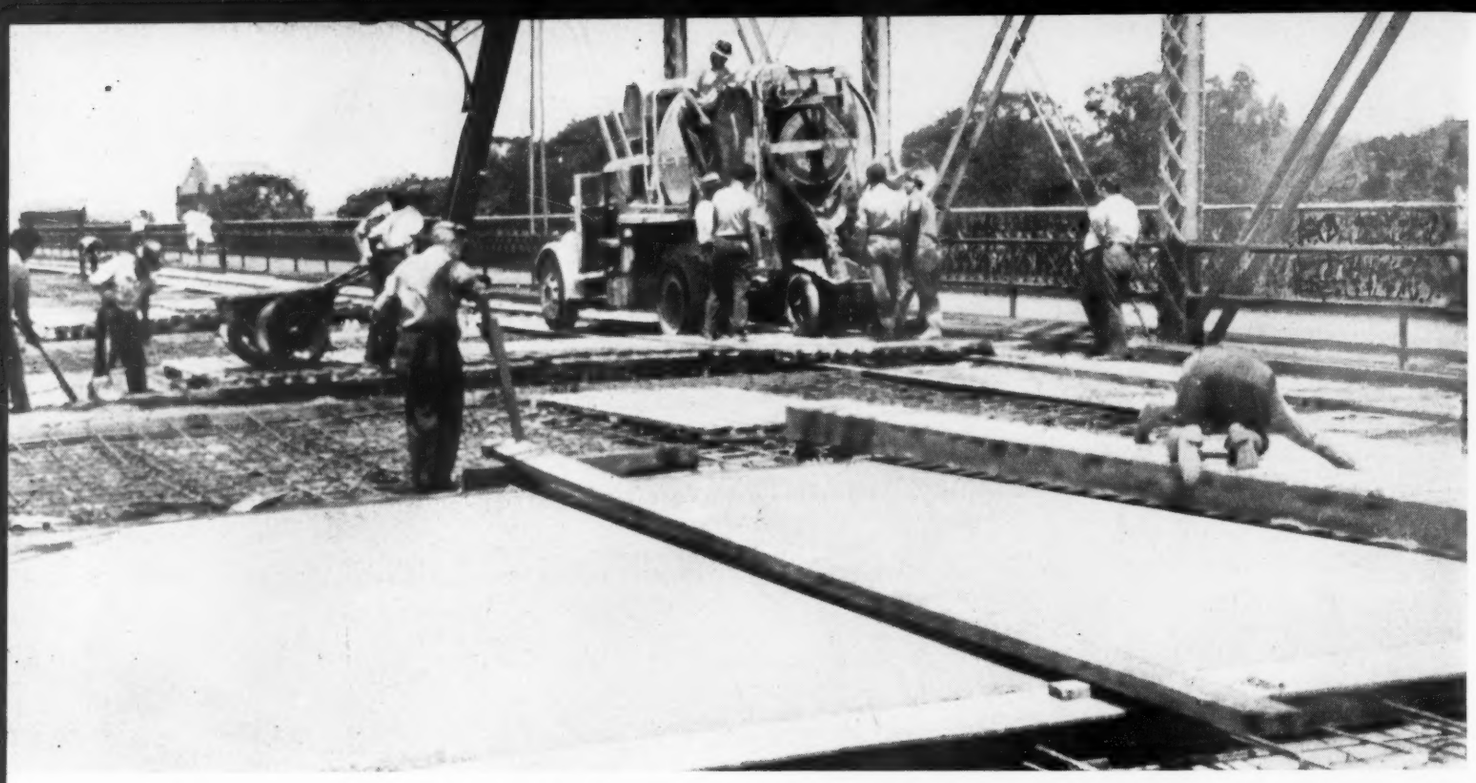


FIG. 7 . . . CONCRETE SURFACE, poured in alternate sections, is finished by longitudinal screeding followed by wood floating from wood bridge spanning panel section. In foreground is expansion joint assembly of 5-in. H-beams covered by sliding plate.

spiral reinforcement in Fig. 3. A ½-in. slot separates the buckle-plates along the center line of the stringers adjacent to the bolt lines. The buckle-plates were welded to the stringers in the slot, and the spiral reinforcing bars were fused to the buckle-plates by shielded-arc welding (Fig. 3) to effect the shear or bonding medium between the concrete roadway slab and the I-beam stringer.

The strength of the floor, as reconstructed, has been increased from 6-8-ton loading to 15-ton loading. This does not exceed the effect on the trusses of a uniform live load of 100 lb. per sq. ft. over the entire floor, for which the trusses were originally designed.

The floor beams, spaced 17 to 21 ft. apart, were also of sufficient strength to carry two 15-ton truck concentrations and street car loading in line. The floor beams of the deck span, 10 ft. apart, were overstressed and were reinforced by welding a pair of 4x6 in. angles in both top and bottom flanges.

In addition to the steel reinforcement spirals, ½-in. round transverse and longitudinal bar reinforcement provide for shrinkage and thermal changes. By means of welded connections, transverse spirals join the buckle-plates to the pavement slab for transverse composite beam action. The longitudinal spirals are ⅝-in. plain round bars with 8-in. pitch; transverse spirals are ½-in. rounds with 8 and 10-in. pitch.

A close-up view of the spiral reinforcement is shown in Fig. 2. The slot weld (½-in. fillet, 2 in. in length and the spiral weld (¼-in. and 5/16-in. fillet, 1¾-in. in length) coincide in position at the point of contact of the spiral, so that both welds could be made simultaneously. Some of the buckle-plate bolts were knocked out in the operation of removing the old pavement. No shear value was assessed for these bolts in design of the composite section. There are 19,000 in. of slot welding, 11,600 in. of overhead welding under the street car tracks, and 96,500 in. of spiral welding. The weight of the spirals amounts to 29,000 lb.

For concreting the pavement slab a sectional platform, which was readily removed by hand, was placed on wooden horses to form a stage over which the concrete was hauled in buggies. Alternate sections of the slab were poured to facilitate longitudinal screeding. These sections were bounded by transverse construction joints over each floor beam. The bulkheads rested against a pair of 2½-in. angles, which joined and supported the buckle-plates transversely. Since the concrete slab sections

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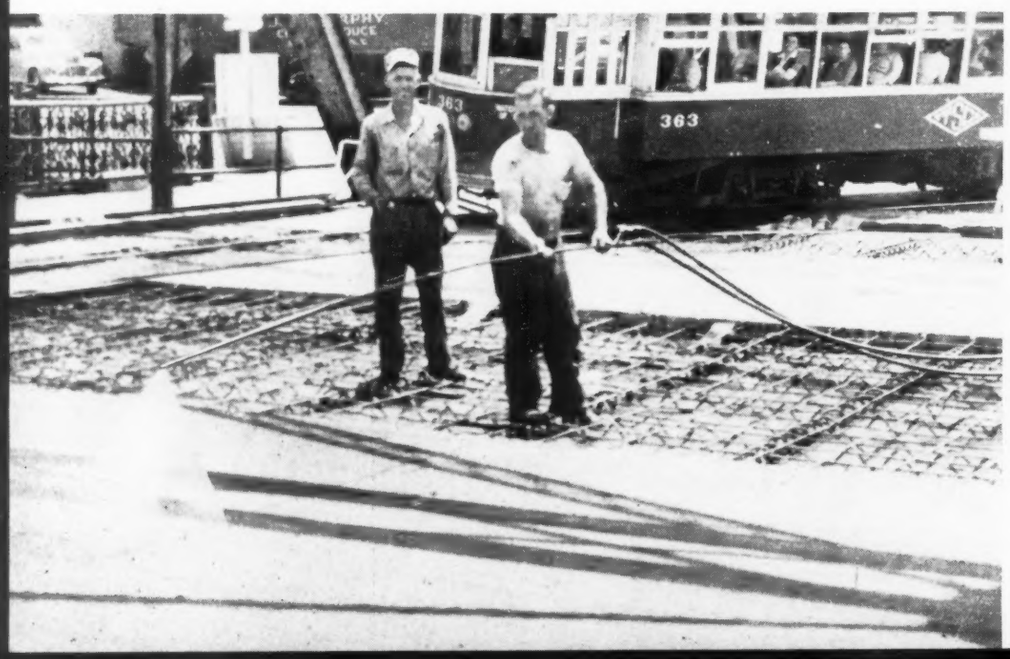
FIG. 8 . . . CURING of finished concrete roadway (below) is done by spraying membrane over surface.

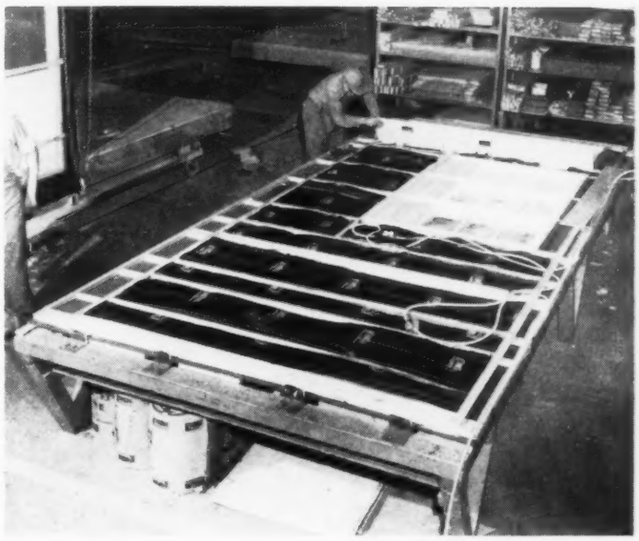


SMALL PREFAB HOUSE TRUCKED COMPLETE TO SITE

TWO HOUSES leave factory. Note bedroom wings telescoped into unit to reduce 26x15 ft. house to 26x8 ft. for truck delivery to site. Units are jacked up for loading on lowbed trailer.

MASS PRODUCTION OF SMALL HOUSES, fabricated and erected on a factory assembly line and trucked to the purchaser's lot, is the proposal of P. W. Litchfield, chairman of the board of the Goodyear Tire & Rubber Co. A pilot plant of Wingfoot Homes, Inc., a Goodyear subsidiary, is now in operation and if materials and equipment are readily forthcoming, annual production of 48,900 homes is promised. Foundation preparation and connection of utilities are the only on-site work required.

Weighing 6,500 lb. and having 250 sq. ft. of floor space, the Wingfoot home consists of a kitchen-dining-living room combination, two bedrooms and bath, and is expected to sell for $2,450 f.o.b. factory. The house is 26 ft. long, 8 ft. wide and 8½ ft. high, permitting delivery by truck. Telescoped bedroom wings are pulled out at the building site to convert the dwelling into a T-shaped unit 26x15 ft. Exterior walls are tempered Presdwood, while interior walls, asbestos-covered roof, and flooring on 2x4-in. joists are of plywood. The building is fully insulated and comes equipped with built-in beds, dressers, and bookcases. Construction is speeded by sub-assembly of pre-cut material in jigs.



PRE-CUT MATERIAL is subassembled into wall unit, to which insulating material is attached, for a Wingfoot Home. Panels beneath fixed windows conceal ventilating louvers.

ASSEMBLY LINE (below) shows three stages of operation: (l. to r.) (1) Kitchen cabinets and sink are installed adjacent to heating unit; (2) walls of living room are erected; and (3) roof is placed.

FINE GRADING is done by cutting blade on form-setting machine mounted on side of truck. This rig moves forward as each form section is set and holds steel form at correct elevation and alignment while it is anchored in place with stakes. (Sketch) **WIDENING** of existing 18-ft. pavement to 24 ft. is done with 3-ft. concrete strips along each side. Old pavement is undercut and supported on shoulder of widening strip, which is 14 in. thick at joint and 6 in. at outer end.

SPECIAL EQUIPMENT

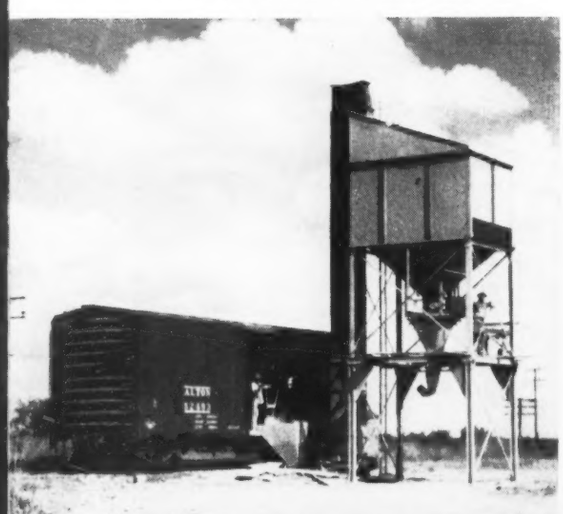
Places 3-Ft. Widening Strips

Along Sides of Concrete Pavement

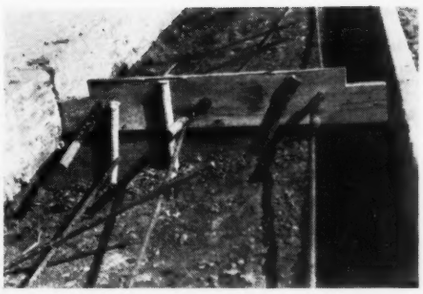
TEXAS IS WIDENING hundreds of miles of its old 18-ft. concrete pavements with 4 to 6 ft. of new concrete slab. With their customary ingeniousness, Texas contractors have developed special equipment for this work, which has materially reduced costs and, during the war years, made work possible in spite of labor shortages.

Most of the widening has been a 3-ft. wide strip on each side of the old pavement, but in some places all the widening is put on one side. Widening all on one side is more economical from the standpoint of

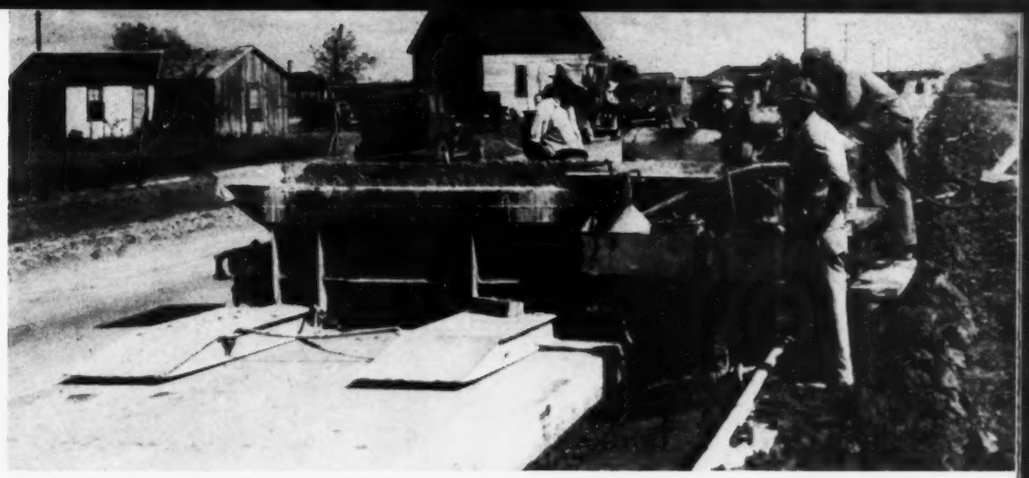
AT BATCHING PLANT (below) railroad car is spotted alongside hopper into which bulk cement is deposited and raised by inclosed bucket elevator for discharge into bin.



SPECIAL BLADE on motor patrol grader (below) does rough excavation for widening strip and undercuts existing concrete slab.



JOINT FILLER is 3-ft. long plank notched at both ends to permit passage of wheels of finishing machine. Cutouts are replaced in plank after finishing machine has passed and dowel alignment is corrected before concrete is placed.

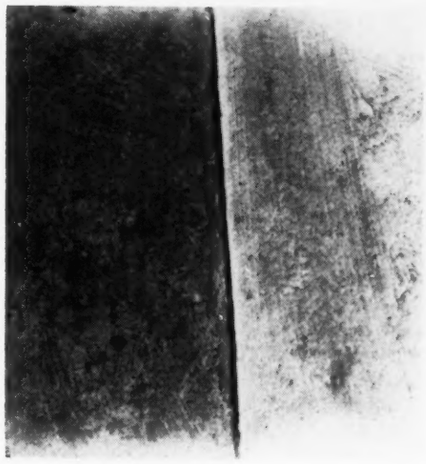


SPECIAL MACHINE strikes off and finishes concrete. Hopper receives ready-mixed concrete from trucks and screw conveyor carries concrete to subgrade. Finishing machine has screed and vibrator tamper.

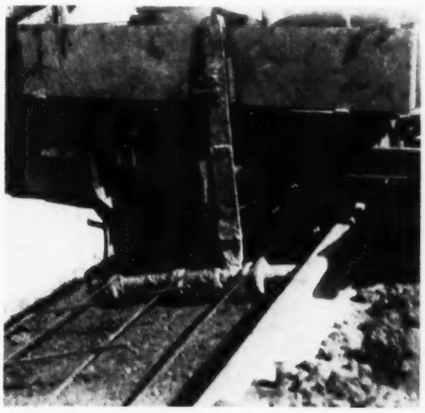
pavement construction, but often requires widening of structures and the use of newly placed subgrade, while the narrower widening placed on both sides, uses the old shoulder as subgrade and may not require widening of bridges and culverts.

A 25-mi. project from Edna, in Jackson County, to El Campo in Wharton County is typical. The existing 9-6-9-in. concrete pavement was 18 ft. wide and a 3-ft. strip of concrete was placed on each side to make the new width 24 ft. Thickness of the widening strip is the edge depth of the old slab plus 5 in., or 14 in., at the edge of the old slab, sloping to 6 in. at the outer edge of the widening. This 5-in. depth is underpinning, extending 4 in. back under the old slab. Some widening was built without this underpinning, but was not satisfactory, particularly on highly expansive soils, as the widening was often lifted above the old slab, or separated from it, with volume changes in the underlying subgrade.

Each 3-ft. widening strip is re-



CAREFUL EDGING of new concrete at junction of old slab is essential to prevent overhang and subsequent ugly spalling.



LIFTING OF REINFORCING BARS to proper position is done by this device attached to front end of finishing machine.

STEEL REINFORCEMENT, in form of longitudinal rods and transverse U-bars, is placed on subgrade ahead of concreting. Groove under existing slab is formed to receive concrete underpinning of strip.

WIDENING STRIP IS HERE SHOWN (below) completed along one side of existing concrete pavement.

CURING OF CONCRETE (below) is done by spraying on newly finished surface colorless waterproof membrane by Hunt process.

inforced, as illustrated in the accompanying cross-section, with three longitudinal ½-in. round deformed bars and one ½-in. round transverse U-bar, 5½ ft. long which extends under the edge of the old slab at intervals of 4 ft. Expansion joints are placed in line with the expansion joints in the old pavement and have three ¾-in. round smooth dowels in each 3-ft. strip. Badly broken areas in the old pavement were replaced with new concrete ahead of the widening.

The bid price, which includes concrete, steel, and the necessary excavation, was $2.85 per sq. yd. Construction was completed early in 1946.

Cagle & Proctor, of Houston, were the contractors and work was under the direction of M. B. Hodges, district engineer, Texas State Highway Department.

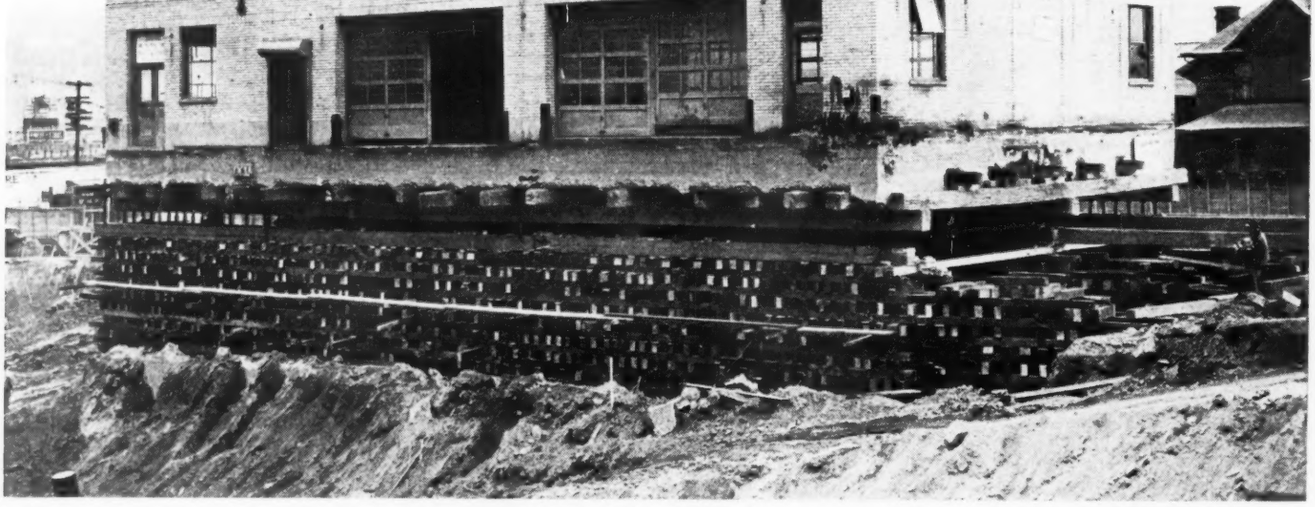
FRAGILE BUILDING MOVED TO NEW SITE

MOVING A BRICK AND TILE BUILDING to a new location was a ticklish job recently completed in Portland, Ore., by LeBeck & Son, movers. The 500-ton service station, 70x100 ft. was raised 14 ft. to new street level, moved 214 ft., and then lowered 8 ft. to new foundations. Because of the danger of cracks developing in this type of construction, the building was not allowed to get out of level more than ½ in. during the moving.

For moving the structure, transverse timber beams were needled through front and rear foundation walls, and the end walls were supported on needle beams resting on transverse timbers. The transverse members were in turn supported by three longitudinals placed just inside the side wall lines and along the building center line. Jacking and cribbing under these longitudinal beams raised the structure and a portion of the wall-supporting foundation to correct grade.

The building was moved through the streets on railroad rails, with steel rollers placed between rails and the longitudinals which previously had been reinforced with steel sole straps. Pulling power was supplied by a truck-mounted winch. Part of the travel was on a narrow road with a 10 percent grade and with excavations which made cribbing necessary to support structure.

The job is part of a $1,000,000 store expansion program of Sears, Roebuck & Co. in Portland, Ore. and was undertaken solely to conserve materials as the moving cost was nearly as high as that for a new building.



JACKS AND CRIBBING support brick and tile structure during moving operations. Building is raised from old foundation and will be moved 214 ft. on rollers.

Cited for Service

OSCAR B. COBLENTZ

COLD, SHREWD LOGIC has made law-trained Oscar B. Coblentz a successful contractor. His inevitable remark: "That doesn't make sense to me," has bested many an opposing argument, has changed the design of many a complicated structure planned by those with far more engineering talent than he has, has altered the course of national legislation affecting construction, and has softened the blow on numerous occasions when bonding companies have been forced to take over a sour job. The construction world has learned that when something doesn't make sense to Coblentz there is no sense to it.

O.B., as he is affectionately known to his friends, entered construction through the back door when, in 1916, he was called in as a legal adviser to straighten out the tangled affairs of the McLean Contracting Co. in Baltimore. After he had put the firm back on its feet, he bought controlling interest in the company and became its president, a position he has held ever since.

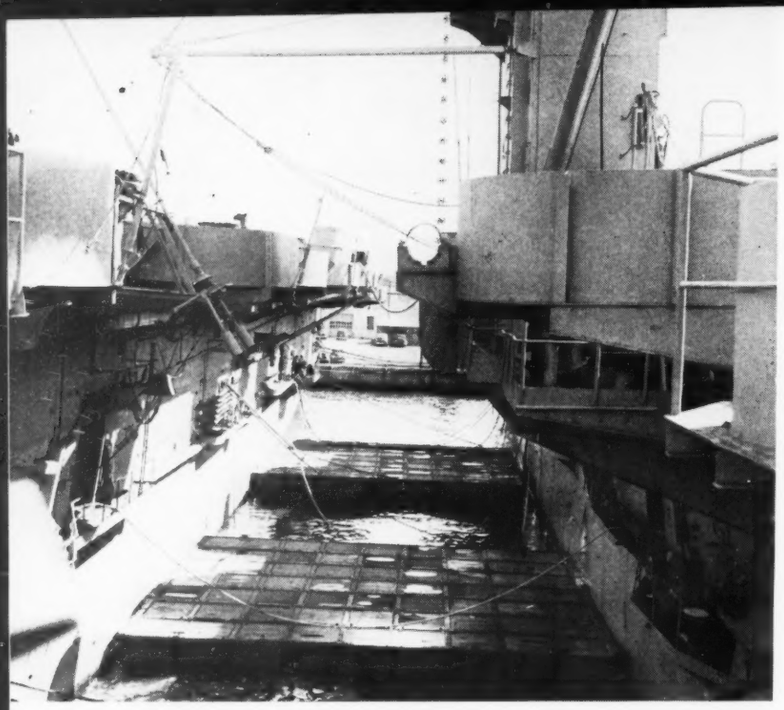
Born in Frederick County, Maryland, in 1878, Coblentz prepared for a life of school teaching at St. John's College, Annapolis.

Having picked up surveying as a hobby, his school teaching was finally interrupted, at the age of 22, by an offer to head up all engineering activities of the Frederick & Middletown Ry. after he had successfully relocated several bad curves and built a new bridge "by studying the handbooks."

Engineering was interfering with a life-long desire to study law, so he entered the law school of the University of Maryland and completed the 3-year law course in one year. Upon passing the bar examination, he joined the old family law firm of Coblentz, Waters & Brown at Frederick. For the next several years Coblentz was mixed up with law, teaching and engineering activities, ending up as chief engineer of the Frederick Ry. Co. and as city engineer of Frederick.

Oscar B. Coblentz, who never had a day's training in engineering, has repeatedly been called in by the Navy as a consultant on difficult construction projects. His advice is frequently sought by surety companies on taking over sick jobs. His fellow contractors seek his aid when in trouble. He served for years as head of the Legislative Committee of the Associated General Contractors of America, became AGC vice-president in 1942 and president in 1943 during the difficult period of war construction. Meantime his firm handled 40 million dollars in navy war contracts.

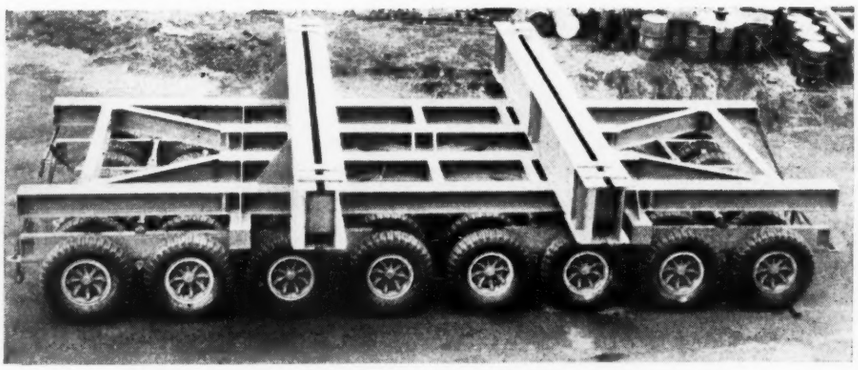
True to his early school teaching interests, he has served as a member of the Baltimore Board of Education since 1921, and as its president for the last five years. To the construction industry his hard-headed common sense, his engineering judgment and his construction ability have been invaluable.



HOW They Did It

CONSTRUCTION DETAILS For Superintendents and Foremen

STEEL BOX PONTOONS are used by Navy to construct camels or spreaders to separate two small aircraft carrier escorts tied abreast at Norfolk, Va., pier. Each camel consists of about six parallel strings of cells, with heavy horizontal timbers bolted to top and bottom at ends to avoid metal-to-metal contact between cells and ships.
U. S. Navy Photo



SPECIAL HEAVY-DUTY TRAILER was built by Rogers Bros. for Eichleay & Co., Pittsburgh moving contractors, to move part of atomic bomb equipment across 30 mi. of New Mexico desert road. Trailer, articulated in two sections, is mounted on 64 pneumatic 18-ply tires and weighs 73 tons. It is 17 ft. wide and 39 ft. long. Single load for which it was built weighed 300 tons.

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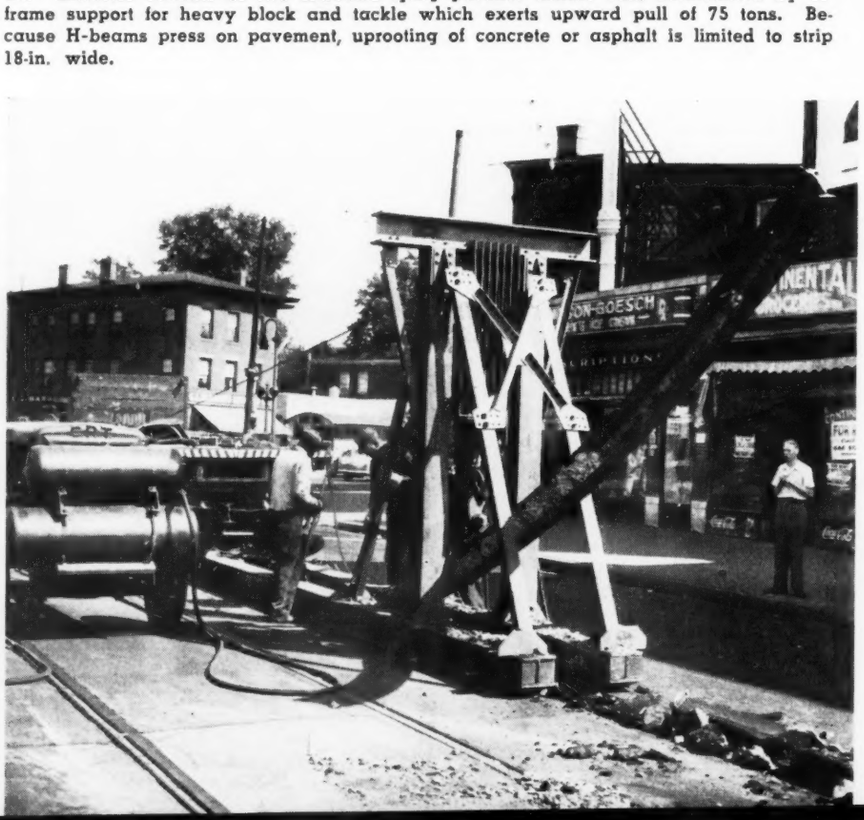
SAND IS INJECTED by airgun (below) into asphaltic sealing membrane to strengthen and render it additionally resistant to weathering in test operations being conducted by U. S. Bureau of Reclamation on Boise project in order to develop a low-cost canal lining.

STREETCAR RAILS (below) in Hartford, Conn., are ripped from foundations, spikes and all. Extractor consists of two H-beams lying parallel astride rail, surmounted by A-frame support for heavy block and tackle which exerts upward pull of 75 tons. Because H-beams press on pavement, uprooting of concrete or asphalt is limited to strip 18-in. wide.



BULLDOZER AND TRUCK COMBINATION (below) is provided by Willys Jeep in construction of house on terrain marked by steep grades and sharp angles. When grading is finished, Rodney Walker, Los Angeles building contractor, will use this 4-wheel-drive vehicle as light truck for hauling supplies and equipment.

GROUT IS APPLIED as binding agent to rock-faced retaining bank for 40-ft. high flood control wall being built near San Bernardino, Calif., by Winston-Utah-Vinnell Construction Co. Batches of 37 to 38 cu. ft. of grout are mixed and simultaneously discharged and spread by Worthington-Ransome 34-E dual-drum paver. Special attachment on bucket to provide 1-in. opening controls rate of flow and operator can swing boom fast enough to spread mortar as it flows. On lower portions of slope, where vertical drop between bucket and rock facing would be great enough to result in segregation of mix, grout is discharged into hopper and elephant trunk device suspended from end of power boom so that smooth flow is assured.

HOLES IN CONCRETE WALL (below) at New Jersey foundry are cut by 55-lb. Ingersoll-Rand Jackhamer mounted on column and arm, with column held rigid between working platform and overhead horizontal timber member extending from wall and supported by timber upright. Holes spaced 2 or 3 in. apart are drilled to 12-in. depth to form rectangle outlining section to be removed. Broaching tool, with rounded shank, is then used to break out concrete between adjacent holes and block is pried loose at back with chisel. Block can then be worked out with thin bar.

TWO NAVAL AMPHIBIOUS TANKS (above and below) are used by U. S. Bureau of Reclamation survey crews to cut through tule and willow undergrowths on Colorado Basin project between Needles and Topock, Calif. Cleated crawler tracks and armor-plated exteriors of these 8,000-lb.-capacity tanks slash through heavy thickets to places that would otherwise have required days to reach. They travel at 4 to 6 mph. in water.

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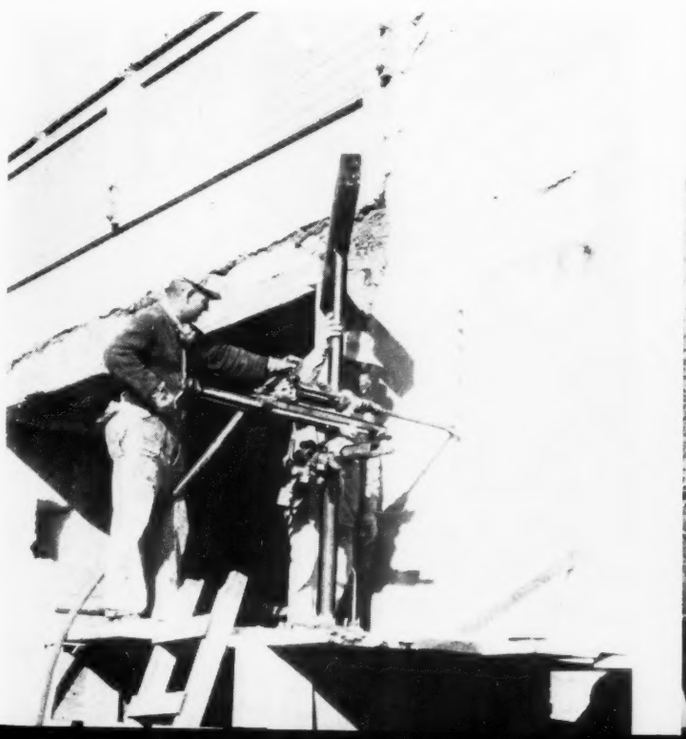
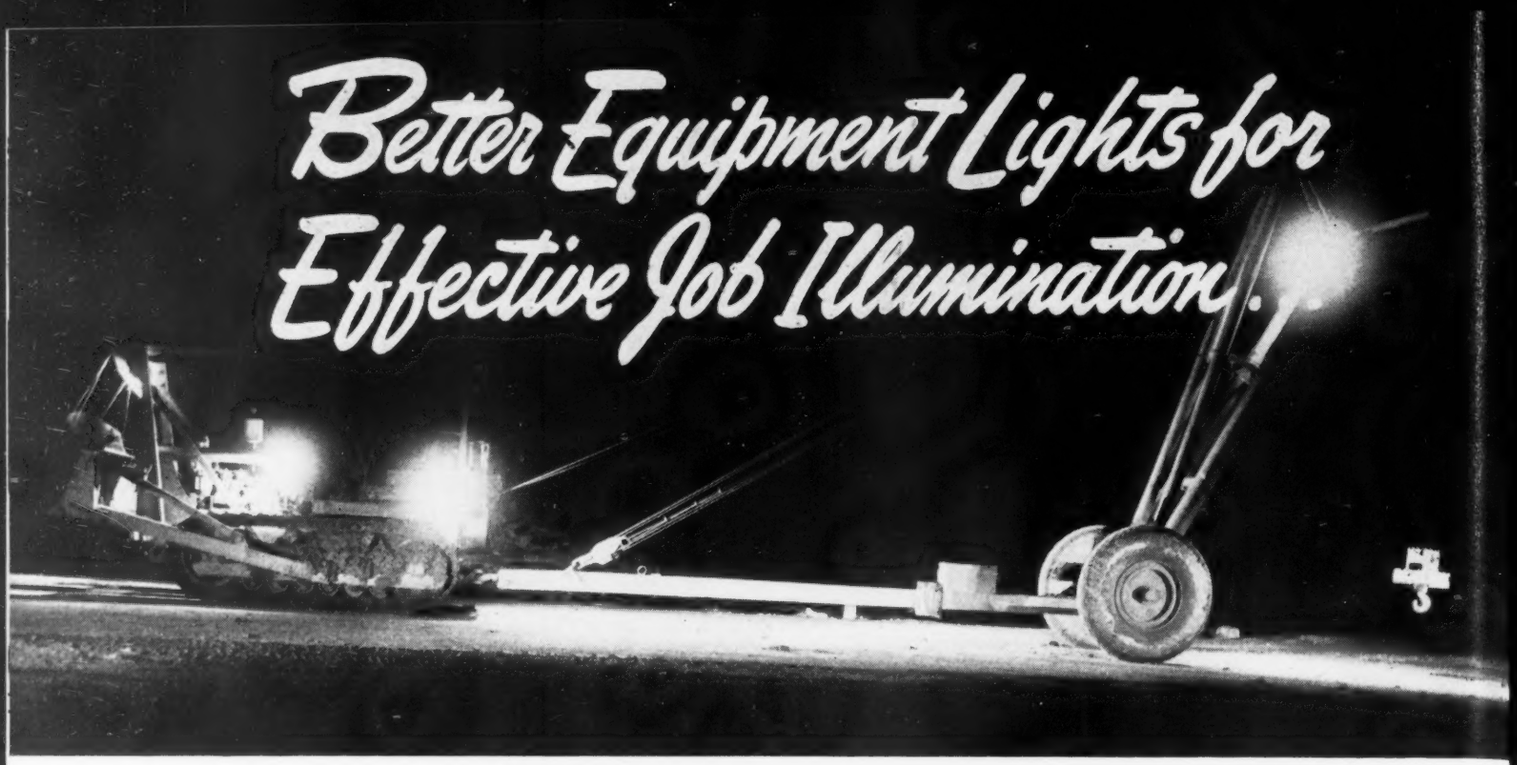
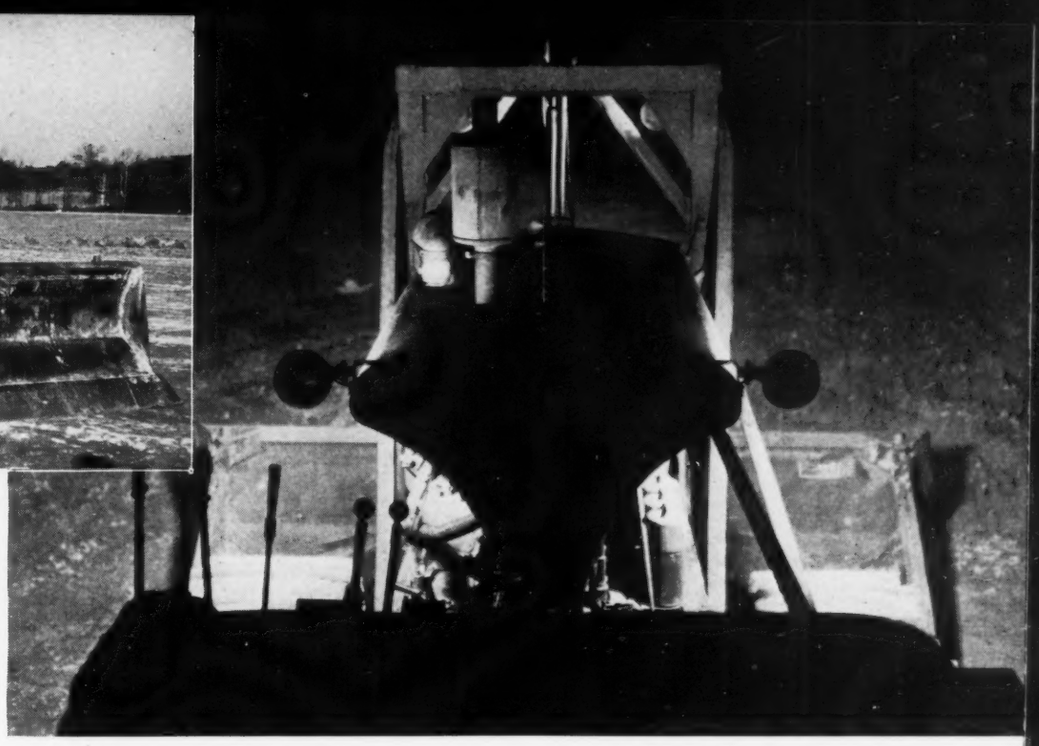


Better Equipment Lights for Effective Job Illumination



NIGHT ILLUMINATION of earthmoving work can be made safer and more effective by installation of proper lights on the various pieces of equipment, according to tests conducted by the Engineer Board at Ft. Belvoir. Three requirements must be met, however, to accomplish the desired results: (1) Lighting fixtures must have suitable light-distribution characteristics; (2) fixtures must be located on the rig in such a manner as best to illuminate the working area in the immediate vicinity, to eliminate shadows, and to prevent glare; and (3) generators in the rig must be

PATROL GRADER LIGHTS include two 32-c.p. headlights on front, one on rear; two 100-c.p. working lights on universal mountings high on frame over moldboard; and one 50-c.p. spot mounted high for general illumination. Generator, 12 v., 40 amp., is driven by grader engine.



BULLDOZER OPERATIONS are well lighted by one 32-c.p. headlight and one 50-c.p. flood, both adjustable, on front of A-frame; two adjustable 50-c.p. floods on engine hood to illuminate blading area; and two fixed 100-c.p. floods on rear (not shown) to light up towed equipment and for backing up.

ample in capacity to power properly the installed lights.

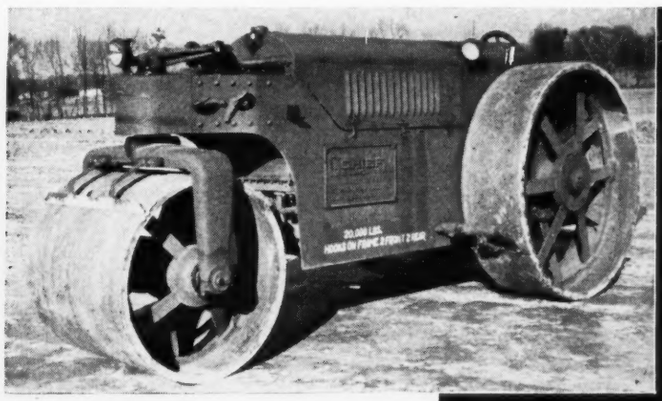
Equipment arriving overseas with inadequate lights for efficient night operation led to requests to the Engineer Board to investigate possibilities of better lighting. Most machines, according to the complaints, were fitted with too few lights, if any at all, and those were of unsatisfactory design.

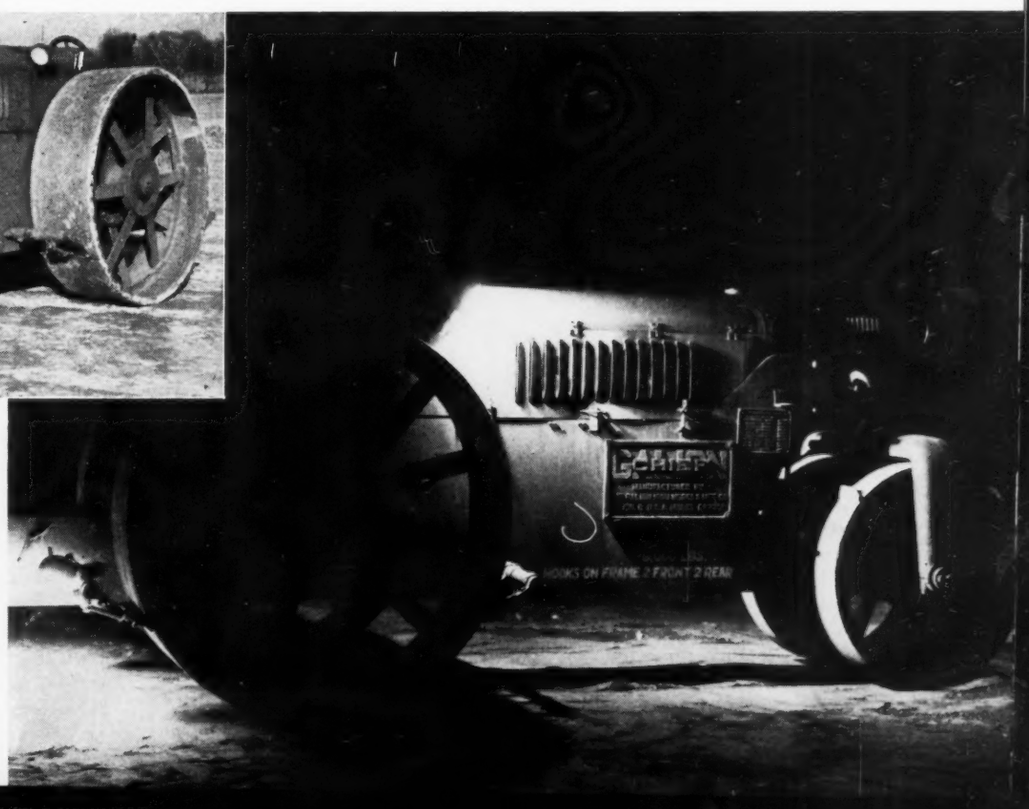
The experimental work at Fort Belvoir included studies with tractors, cranes, graders, rollers, carrying scrapers, distributors, and ditching machines. Better lighting has been developed for almost every type of machine, promising not only more efficient night work, but also increasing the safety of the operations.

To minimize the number of different parts required for lights on the various types of equipment, the same lighting fixtures were adopted for floodlights, headlights, and spotlights. This general use was accomplished simply by selecting the proper type lens with the correct socket. A single-contact socket was found best for spotlights and floodlights and a double-contact type for two-filament headlights bulbs. Another requirement was that the fixture take 100-c.p. bulbs, as this high light output is often necessary for floodlighting applications.

One satisfactory fixture for general use shown in an accompanying illustration, is manufactured by the Guide Lamp Division of General Motors. It is 6¼ in. diameter by 4½ in. deep, with a 5⅜-in. lens opening. The unit consists of a sheet steel housing, lens ring, glass lens, a steel luminized reflector, bayonet-type socket, universal mounting bracket, and a steel handle. While the housing is not waterproof, a rubber gasket bearing against the lens makes the lamp compartment watertight.

When using such a fixture as a spotlight, a clear





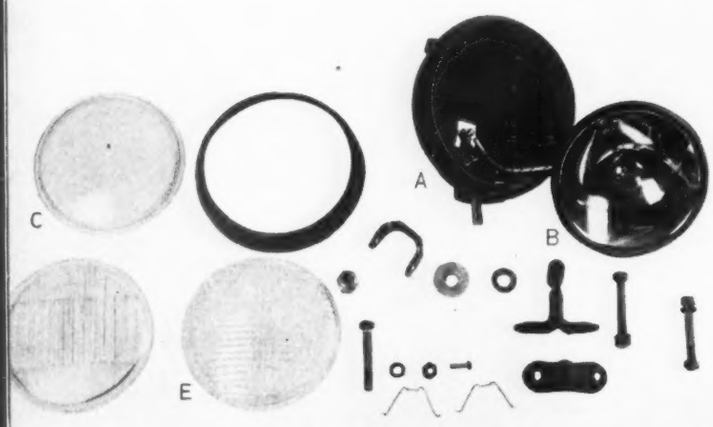
THREE-WHEEL ROLLER travel, both forward and reverse, is illuminated by one 32-c.p. headlight on steering pin, two 50-c.p. floods, one on each side, near rear of engine hood to light the front roll and adjacent working area; and two 50-c.p. floods at rear, mounted on swivel brackets holding rear roll scrapers.

THREE-AXLE ROLLER needs six lights to illuminate properly the working areas both fore and aft. One 32-c.p. headlight at each end lights up the travel path, while two sets of 50-c.p. adjustable floods over the rear and center rollers enable the operator to see his work properly and to gage the overlap on successive trips.

lens is used with a single-contact bulb of 50 c.p. To convert the fixture into a headlight, a double-contact socket and a 32-c.p. double-filament bulb are installed. Also, the clear lens is replaced with a prismatic lens of the type normally used on automobile headlights.

The most satisfactory type of lens to convert the fixture to a floodlight is of a modified prismatic design originally giving an 80x20-deg. rectangular light distribution. Experimental work with this type of lens revealed that much better light distribution is obtained if the lens is sandblasted on the inside. Treated in this way, the lens distributes the light through 180 deg. in all directions, but retains a high intensity in the original 80-20-deg. spread. This high intensity light may be directed on the work plane with general illumination provided by lesser intensity light radiated in the other angles. The floodlight uses a single-contact bayonet type socket accommodating 50- and 100-candlepower bulbs. It has been found preferable to place the floodlight in the line of sight between the operator's eyes and the work plane, reducing troublesome shadows.

INTERCHANGEABLE PARTS (below) convert single fixtures to either low or high power headlights or floodlights as required: A—Holder, which may be welded to rig in desired position, either as fixed or adjustable unit: B—removable reflector fitted with single or double contact bulbs of various candlepower. C—clear spotlight lens. D—prismatic headlight lens. E—modified prismatic lens for floodlights.

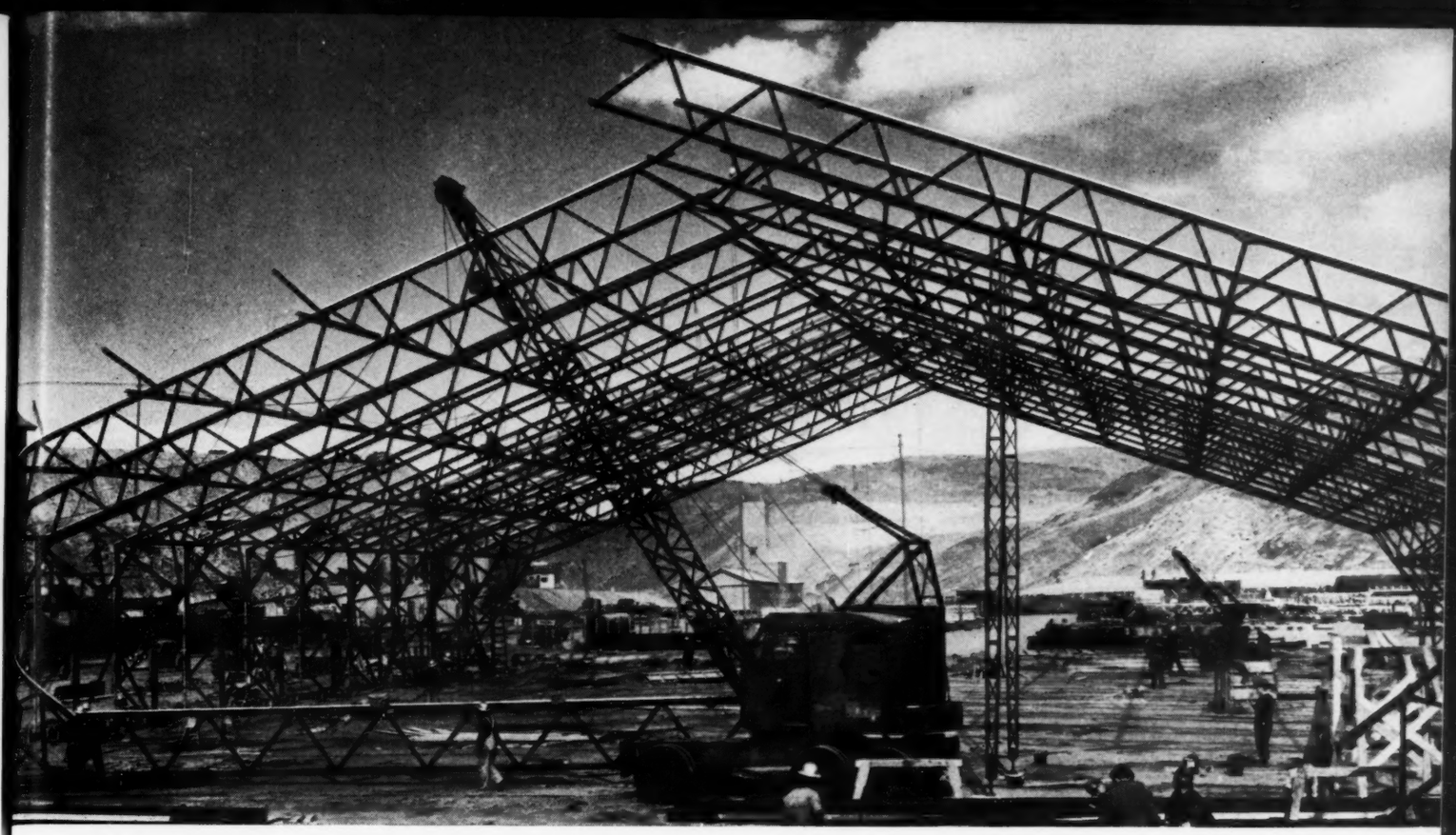


Work of the Army construction forces in all the various climates encountered throughout the world has indicated that the wiring for the lighting system should also be carefully selected. A stranded copper wire, covered with synthetic rubber of high resistance to moisture, oil, gasoline, and fungus, was found to be the best cable for a wide variety of conditions proving especially valuable for work in the tropics.

It was also found best to install the cable on the machinery without any mechanical protection, such as rigid conduit. The latter frequently breaks, traps water and decreases life of the lamp.

Typical installations of adequate lighting are shown in the accompanying illustrations. The front cover of this issue shows a large shovel equipped with two 200-watt floodlights on top of the cab and two 100-watt floods mounted on the front of the cab. These lights require a 115-v. 500- or 700-watt engine-driven generator.

The experimental work at Fort Belvoir to develop optimum nightwork lighting systems was carried out by Lt. F. J. Millican, C. F. Cashell, and W. W. Davis. They worked under the general direction of Major O. P. Cleaver, Chief of the Electrical Engineering Branch of the Engineer Board.



STEEL HANGAR that once housed fighting planes becomes humble shop at Grand Coulee Dam. Link-Belt motor crane is resetting trusses.

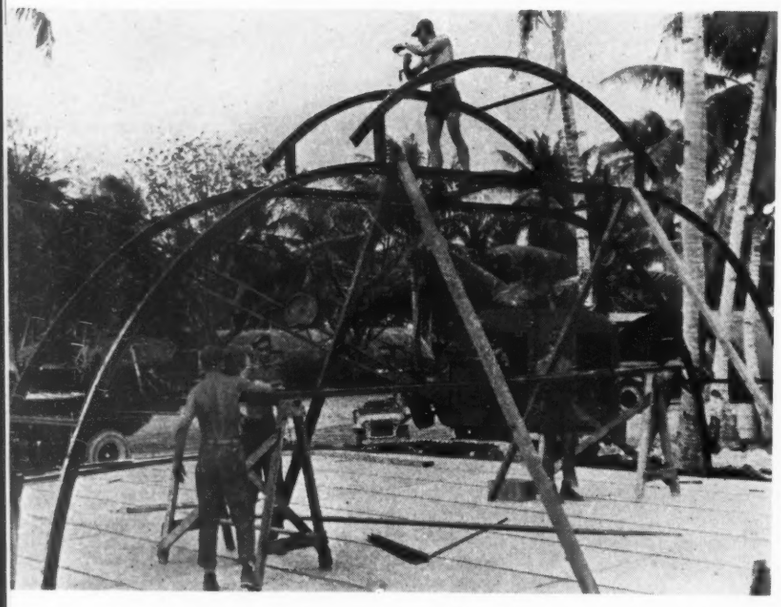
From War to Peace

MORE WAR STRUCTURES, with civilian refinements, are being used to supply peacetime needs. The Bureau of Reclamation at Grand Coulee Dam is building a truck and tractor repair shop from what was once a Butler type Army hangar. Radiant heating coils are placed in the concrete floor slab for heating the building. Electric conduit and utility outlets are also incased in the slab for flexible operation of lights and tools without using long extension cords.

RADIANT HEATING coils and electric conduit (below) are embedded in shop floor slab as vibrator speeds emptying of concrete from job-built box mounted on flat-bed dump truck.

QUONSET HUT MODIFIED FOR SEABEE CHAPEL

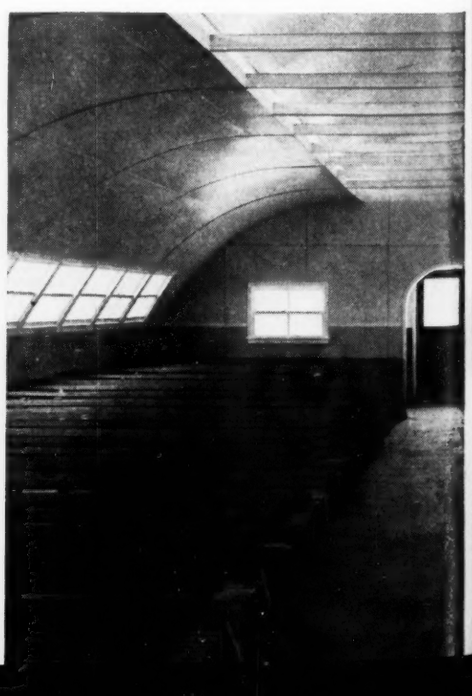
CHAPEL CONSTRUCTED BY SEABEES on Pacific isle is modification of conventional Quonset hut. Special architectural treatment of entryway makes design functional. Edifice is further example of Seabee ingenuity so evident during war.



PREFABRICATED STEEL RIBS ARE UNLOADED from truck and erected by crane in background. Steel frame is completed (below) and windows, kept covered during construction to prevent breakage, are bolted in place.

DIGRESSING FROM ACCEPTED Quonset hut construction, a Navy Construction Battalion Maintenance Unit—ordinarily busy with advanced base maintenance—built an attractive chapel, complete with steeple, on a tropical Pacific island. A standard hut was widened out by lengthening the floor and roof ribs, and adding a tropical-type raised top section, which provides a spacious, well-lighted and ventilated interior. Light from two rows of windows on either side of the chapel, set in "eye-brows", is supplemented by indirect light which enters the eaves and is reflected from the white interior surface of the canopy.

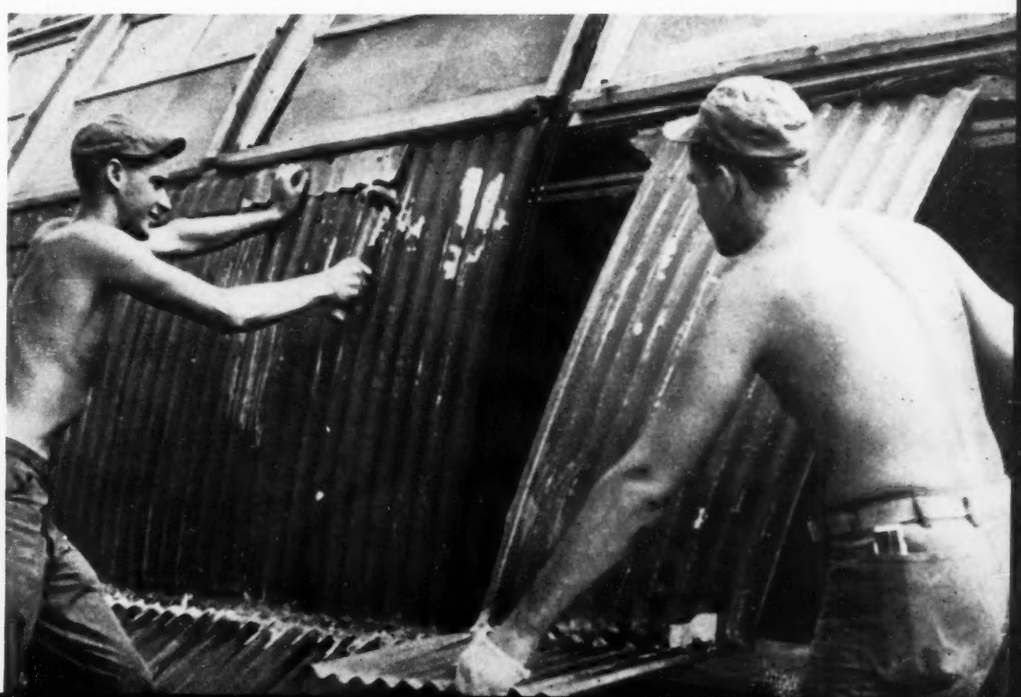
An entryway and simulated bell tower, or steeple, of all-wood construction, faced with wide clapboard siding, give the chapel an esthetic appearance worthy of its tropical setting. A low stone wall of coral slabs is reminiscent of New England.



PREFABRICATED STEEPLE of all-wood construction (left) is hoisted in place over clapboard-faced entryway by crane (right).

CANOPIED SECTION OF ROOF (below) provides ventilation and indirect light for expansive interior of modified hut.

CORRUGATED IRON SHEETS (below) bent by heating with acetylene torch, allow ventilation along lower edges of arch at either side of structure.



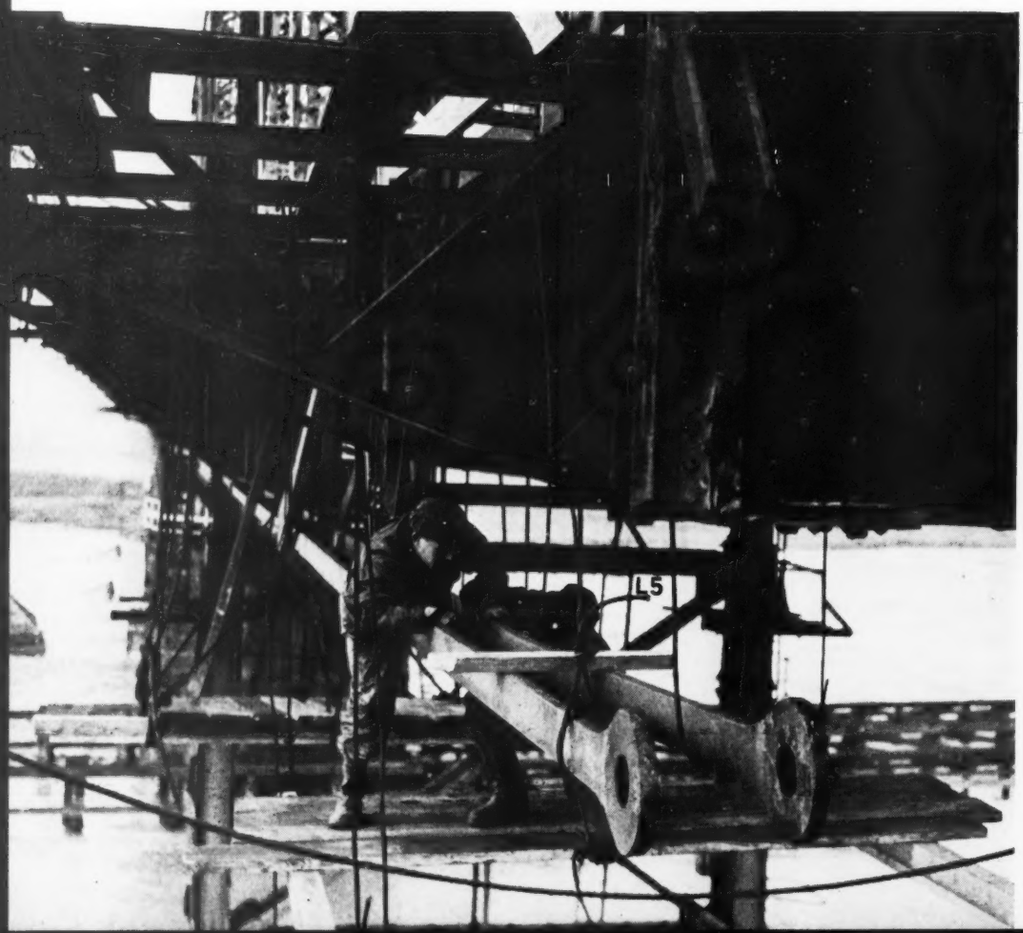
WELDED SUB-TRUSS

By THOMAS W. REEVES

Commissioner of Harbors and Bridges
Department of Public Service,
Toledo, Ohio

MAXIMUM DAMAGE to Fassett Street bridge, Toledo, Ohio, rammed by freighter, is in area of panel 6. Bent diagonals support lower chord eyebars after vertical truss member has been sheared off by ship.

DAMAGED CHANNEL HANGERS at L5 (below) have been burned off and will be replaced with new material. Eyebar will be straightened and re-used.



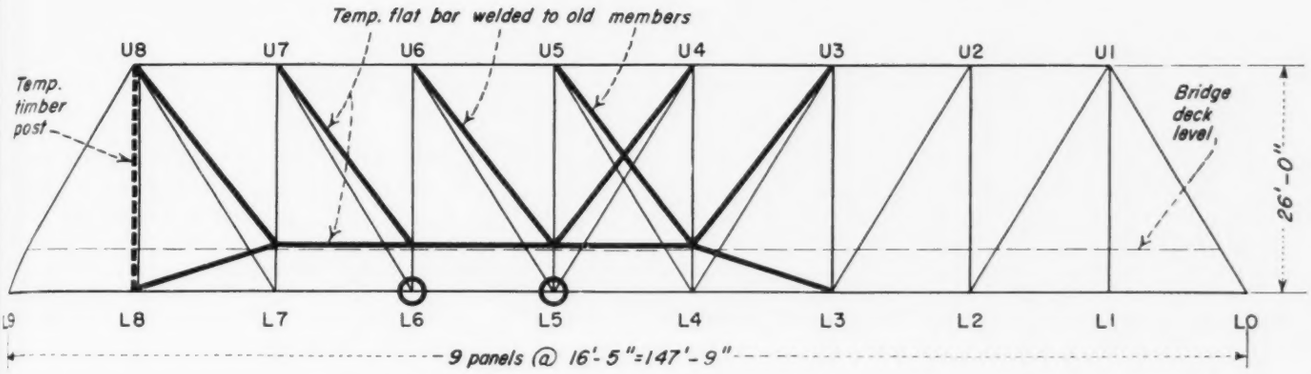
FLAT BARS WELDED as a sub-truss to existing members held one truss of the east span of the Fassett Street highway bridge over the Maumee River in Toledo, Ohio, while sections damaged by a ship collision were repaired. Straightening or renewal of several truss members was necessitated when a drifting lake freighter rammed the bridge.

The damaged bridge truss is a pin-connected through Pratt truss, 26 ft. high with nine 16-ft. 5-in. panels, giving it a span of 147 ft. 9 in. After passing beneath the cantilevered sidewalk, the bow of the freighter rammed the lower chord in panel 6 (see drawing) with sufficient force to shear off the vertical U6-L6 below the floor beam and to rip the vertical U5-L5. A thorough examination of the structure following the accident revealed that in addition to damaging the verticals, the freighter had badly bent the lower chord eyebars and the lower ends of the diagonal rods in panels 5, 6 and 7. It was decided to close the bridge to traffic and to weld a supporting truss to panels 4 through 8, after which the damaged members could be removed.

Heavier Members Substituted

The lower chord of the temporary truss was placed about 5½ ft. above the original chord to permit working from the bridge deck and to raise the new work above the sidewalk and floor framing. Difficulty in obtaining material for the temporary work made it necessary to substitute heavier members than were required; and in general the temporary lower chord was two 6x1½-in. bars while diagonals were two 4x⅞-in. bars. The hanger U8-L8 was supplemented by two 6x6 timber posts to take compression developed by removal of the lower chord. After the temporary truss had been welded to the span, the damaged sections were removed and straightened or replaced. In order to induce as much stress as possible into the replaced

OLDS BRIDGE DURING REPAIRS



DAMAGED BRIDGE ELEVATION shows location of temporary trussing. Difficulty in obtaining long bars necessitated many welded splices. Bow of freighter struck lower chord between L5 and L6.

members, wire rope slings were placed in line with the diagonals and tightened by steamboat ratchets. The diagonals had been cut for removal and straightening of the lower ends, and an angle clip was welded on each side of the cut and pulled up tight with a through bolt. The bars then were heated and rewelded with a splice plate on one side for added strength. The lower chord was handled in a like manner, after which the temporary members were cut out and the span opened to traffic. Difficulty in inducing enough stress into the new members resulted in an alignment that is a maximum of ½ in. low, but it was felt that speed in reopening to traffic a bridge carrying an average of 8,000 vehicles a day was more important than an imperceptible roadway dip.

Repairs to the Fassett Street bridge were completed in 30 days by the regular maintenance mechanics of Toledo's Division of Harbors and Bridges under the supervision of the writer and his assistant, B. A. Campbell.

TEMPORARY TRUSSING (below) is welded in place preparatory to repair of damaged members. Timber post (left) is to take compression developed when lower chord units are removed.

HOUSING CAN COST TOO MUCH

EVERYONE in the United States wants our people, and particularly our war veterans, well housed quickly. Almost everyone, we believe, likes the vigor and imagination with which Wilson W. Wyatt, the housing expediter, is going about the job of mobilizing our housing resources.

No one, however, wants the veterans, or anyone else, to get a lot of severe economic headaches along with the housing. As it stands, the emergency housing program runs unnecessary risks of having such results.

Here are the reasons:

1. The principal opportunity the program offers to the veteran is that of buying a high-cost house where a chance to rent would, more often than not, meet his needs much better.

2. At the worst possible time, the program adds substantially to the dangers of a runaway inflation of the sort that inevitably ends in a crash.

3. Little is done to try to reduce the arbitrarily high costs of building, such as those resulting from restrictions imposed by labor unions and antiquated building codes.

4. By giving overriding priorities to unattainable goals of home construction, the program endangers a volume of industrial construction necessary to sustain full employment.

Needs of Veterans

First on the needs of the veterans. What many, if not most, veterans need is a chance to rent a place at a reasonable rental while they are getting shaken down in their postwar careers which in many cases are inevitably unsettled at this time. Essentially, what the "Veterans Emergency Housing Program" gives them is a chance to buy, for about $6,000, a house built along conventional lines and padded with much unnecessary labor and material cost.

But what are the alternatives? There are at least two. One is to put far more emphasis on more effective use of existing housing than the Wyatt program has thus far. The other is to see that the proportion of new rental units is much stepped up.

Incredible as it may seem, there are at present more than 2,000,000 vacant dwellings in the United States. Many of them should be demolished. But many permit of relatively satisfactory temporary use. Many more single dwellings can readily be converted into comfortable multiple dwellings. The emergency program assumes that only 350,000 dwelling units can be provided this year by these expedients, but it does not seem unreasonable to assume that this figure might be doubled by a vigorous drive. The result would be a better balanced emergency housing program, because it would provide more rental housing immediately and save critical building materials.

Of the new housing units contemplated by the Wyatt program, it is estimated that only about 20 per cent will be for rent. Before the war more than half of the homes in the United States were rented. That means that unless the Wyatt program is to create little less than a revolution in the terms on which homes are occupied, it must be revised to include a much higher proportion of rental units.

To secure the result in the face of present high building costs special inducements will be required. They might be provided by allowing accelerated tax amortization of, say, half the construction cost over the next five years, together with rent ceilings high enough to make this form of investment attractive. This would, of course, call for higher rents, but the actual price to the veteran, in woe as well as money, might well be much less in the long run than if he bought an over-priced house now.

Too Easy To Pay Too Much

One of the mysteries of the Wyatt program is its general emphasis on measures to increase the supply of money with which to buy houses when the demand for houses is already at an all-time high. Some veterans may need special financial help, but the plan to give 90-95 per cent mortgages generally on new homes is not only unnecessary but positively dangerous. By providing up to $3.5 billions of government-guaranteed credit for homes this year, and almost twice as much in 1947, the program will release an equivalent amount of individual savings to create further demand for goods and services. All that such generous mortgage terms will accomplish with certainty is a dangerous lengthening of the odds that we will not avoid a boom and bust cycle of inflation.

If building codes were brought up to date and arbitrary union working restrictions were eliminated, the way would be paved for reductions in the price of standard houses which, it has been estimated, might run as much as 20 per cent. This would both give the buyer of a new house a far better run for his money, and also reduce the inflationary pressure created by the super-generous credit arrangements involved.

Getting anything done along this line is difficult, particularly because the restrictions are imposed by tens of thousands of separate localities and organizations. Some headway is being made. The local emergency housing committees being set up under the Wyatt program provide a means of doing much more. Far more steam must be put behind this aspect of the program, however, if its greatest potentiality for permanently constructive accomplishment is to be realized.

Crippling Essential Industrial Production

The goals set for emergency housing construction —1,200,000 new homes started this year and 1,500,000 started in 1947—are higher than any qualified authority thinks can be met without crippling other essential construction. The reasons commonly assigned for such optimistic goals is that they are inspiring to those in the industry and soothing to those who want something tremendous done about housing.

Under normal circumstances, relatively little damage might be done by such excessive goals which are a common feature of most Washington programs trying to elbow their way to the center of the national stage. However, the emergency housing program carries with it top priorities for the materials to be used. Consequently, other essential construction will have to get along on whatever share of critical building materials will be left after all demands of home builders have been satisfied.

The Civilian Production Administration estimates that output of important materials will fall far short of needs. It forecasts a 15 per cent deficit in lumber, 18 per cent in bricks, and 52 per cent in cast iron radiators. Hence, unless building materials output can be stepped up far more rapidly than now seems possible, a prohibitive squeeze will be put on industrial building to provide the materials needed for the Wyatt program. This would complicate unbearably the problems of sustaining full employment and getting the flow of production so important in avoiding the boom and bust route.

Perspective on the Housing Shortage

What is needed is an aggressive drive to get full production of building materials as rapidly as possible. Such a drive should concentrate on measures aimed at helping the industry remove the obstacles to all-out production rather than on such measures as the subsidy plan which seems quite likely to succeed only in enmeshing the industry in more government controls. After making due allowance for the materials outlook and the needs for essential non-housing construction, housing goals should then be set as high as feasible. As matters stand, by setting construction goals before feasible material goals are determined, the cart is put before the horse.

There can be no doubt about the acuteness of the housing shortage and the necessity of a program commensurate with the magnitude of the problem. It also remains true, however, that the housing shortage for the nation as a whole is not quite as desperate as those who want the country to drop everything and go to building houses would have us believe.

During the war 3½ to 4 million new dwelling units were built or created by remodelling in other than farm areas. The number of families living in such areas increased by less than 3½ million. Even though some of this housing was located in remote places as an adjunct of war production works, the wartime increase permitted a margin for more housing per family at this time. Indeed, it has been estimated that the rate of doubling up is only about one-third as great as in 1940. The margin did not begin to suffice, however, to meet the needs of those millions of people particularly in the lower income groups who, thanks to rapid increases in income, can afford to have and insist upon having better housing than they have ever had before.

A rising standard of income which makes possible a new standard of housing for many people is a fine thing. Above all, it is important to see the veterans get the best possible break in housing.

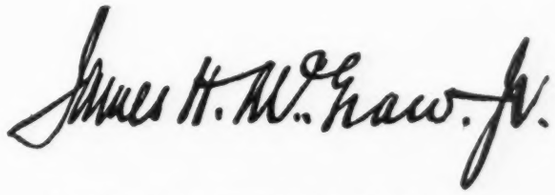
But Housing Can Cost Too Much

The Wyatt program has many good features. The emphasis on prefabrication, though perhaps overoptimistic, is hopefully modern. The emphasis on local collaboration in solving housing problems which are inevitably in large part local should lead to permanently valuable results. The vigorous mobilizing of 300,000 temporary dwellings to meet at high speed some of the most desperate shortage is all to the good.

The main trouble with the program is that it does not pay enough attention to the economic havoc which may be created in the process of trying to meet its excessive goals. As a nation, we should be and are willing to pay a high price to get adequate housing. But the price will be too high if we:

1. Give the veteran a bad bargain by selling him an over-priced house.
2. Cripple industrial production needed to create good jobs for veterans, and
3. Touch off a disastrous inflationary sequence in the process.

These pitfalls can be avoided. All of us, including the veterans, have a common interest in seeing that they are avoided.



President, McGraw-Hill Publishing Co., Inc.

THIS IS THE 47TH OF A SERIES

LEGAL ADVENTURES of TRACTOR CONN

By LESLIE JOBB

No contractor ever tries to be his own dentist or his own shoemaker. It is even more dangerous for him to be his own lawyer. There are, however, some legal rules which every contractor should know, and these rules may be explained in plain English without resorting to the jargon of the law, unintelligible to most laymen.

This series of articles, dealing with the Legal Adventures of Tractor Conn, a typical contractor anywhere in the United States, explains some of these legal points in plain language for the contractor. Each one is based on an actual decision of an American Court.

The Case of the Mechanics' Lien

One of Tractor Conn's Pennsylvania building contracts contained the following provisions: (1) That Tractor Conn was to furnish all materials called for by the plans and specifications; (2) that he was to hand over the completed building free from all claims, and (3) that all disputes arising out of the tenor and intention of the contract should be referred to the architect for his ruling and decision thereon.

After the building was nearly completed a mechanics' lien was filed against it, the owner paid the lien, and demanded repayment from Conn and the sureties on his bond.

"All right, we'll refer it to the architect according to our contract," Tractor Conn proposed.

"No, there's no referring about it, for the wording of the contract doesn't cover a case like this," the owner contended.

"I contend that 'all disputes' used in the contract is broad enough to apply," Conn persisted.

And the Pennsylvania Supreme Court ruled that Tractor Conn was right, in the case of Barclay vs. Deckerhoof, 171 Pa. St. 378.

The Case of the Arbitration Clause

Tractor Conn had agreed to do certain work for a Washington city, and one clause of the contract contained the following provision:

"Any dispute between the said city and said Tractor Conn in reference to the work to be done, or regarding the interpretation of this contract, is to be submitted to the arbitration of three arbitrators, one to be chosen by the said city, one by the said Tractor Conn, and the third by the arbitrators so chosen as aforesaid, whose decision, or the decision of the majority of them, is to be final and binding upon both parties, and such arbitration is to be held and completed before an action of law is brought by one party against the other."

After working about a week Tractor Conn, without any valid excuse, abandoned the work and the city sued for damages.

"You've got to arbitrate before you can sue, according to the plain terms of the contract," Tractor Conn proclaimed.

"The contract contemplated that you were to finish the work, so if you abandon it, we're not bound to arbitrate," was the city's contention, which the Washington Supreme Court upheld in the case of Jackson vs Walla Walla, 226 Pacific Reporter, 487.

The Case of the Arkansas Lien

An owner had employed Tractor Conn to erect a building, Conn sublet part of the work to John Doe, and Conn "threw up the job" on Jan. 15.

The owner then employed Richard Roe to finish the work. Roe completed his contract on Feb. 10 and Doe filed a lien on Feb. 15 against the building for his work under his subcontract with Tractor Conn, relying on an Arkansas statute requiring a subcontractor to present his claim within 10 days after the job or contract let by the owner shall have been "fully completed."

"You're too late," the owner contended.

"'Fully completed' refers to the original contract, and you were bound to file your claim within 10 days after Tractor Conn abandoned his contract with me," the owner argued. The Arkansas Supreme Court ruled that the owner was right in the case of Basham vs Toors, 11 S.W. 282.

More Legal Adventures of Tractor Conn Next Month

OPERATION "FROSTBOX"

By C. MORIARTY

Asst. Proj. Manager Arctic Contractors, Fairbanks, Alaska

DIESEL TRACTOR trains haul supplies to oil exploration operations in northern Alaska.

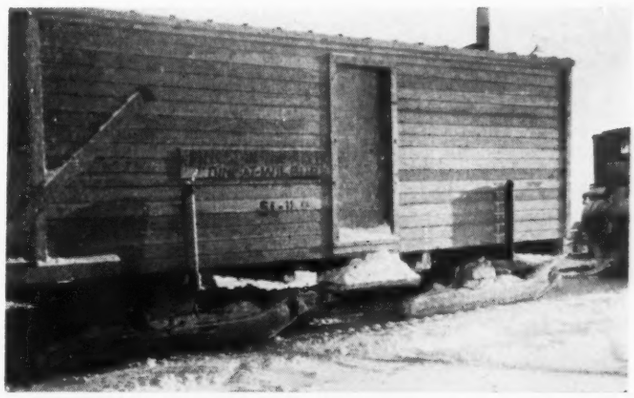
TRACTOR HAULING over ice has been done before, but tractor-sled support of Navy oil explorations on the north slope of Alaska is probably the most unusual and difficult enterprise of its kind ever undertaken. Supplies and equipment were moved into Point Barrow, at the north tip of Alaska on the Arctic Ocean, by Navy vessels last summer. This winter, with both land and sea frozen solid, they are being moved out to the exploration operations by tractor trains operating entirely over ice. Air support to the operations is also afforded by Naval Air Transport Command as well as by "bush" pilots.

Each train consists of five D-8 Caterpillar diesel tractors pulling 30 sleds, each loaded with 25 tons of cargo. Cargo, of course, includes diesel fuel for the tractors. The present route crosses several frozen arms of the Arctic Ocean from Pt. Barrow to Cape Simpson, on to Harrison Bay to the mouth of the Colville River. The route then follows the river for 100 mi. inland.

Sled operations will total about 100 days this winter season, terminating some time in May when the ice becomes dangerous. A lesser part of the operation is hauling 1,000 tons of cargo by motor truck from Pt. Barrow to Cape Simpson.

Tractor-train hauling has been continuous since Feb. 1, except for five days when it was necessary to "hole up" during a blizzard. The weather is not considered bad until visibility gets less than 50 ft. Temperatures have been consistently well below zero, sometimes dropping to 50 below.

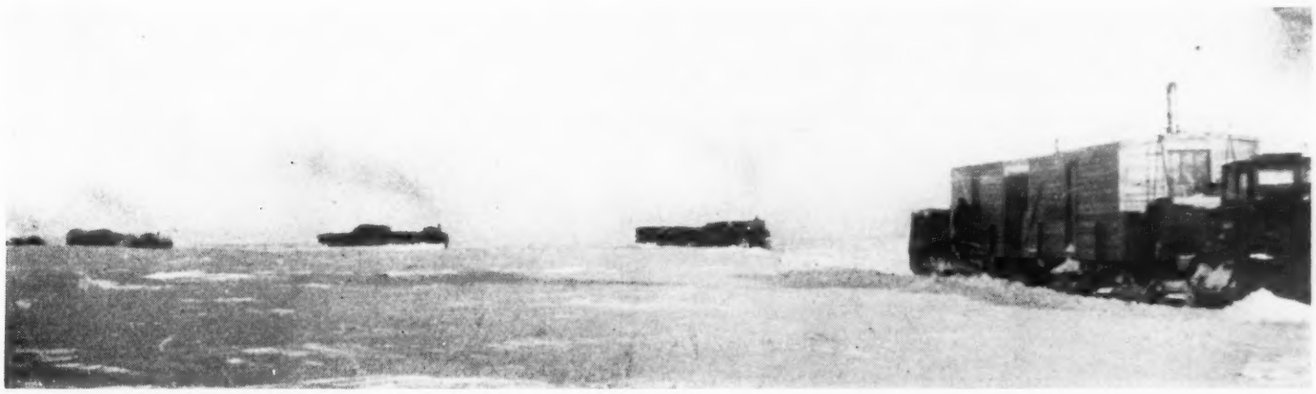
Bunkhouses for the crews travel with the trains.



BUNKHOUSES for the tractor crews travel along with the sled trains.

Tractors are driven 14 hr. per day, 7 days a week. Small planes, equipped with skis for loading, make frequent contact with the trains.

The exploration work is being carried out by Arctic Contractors, a combination of Hoover Curtice & Ruby, Inc., New York, C. F. Lytle Co., Sioux City, Ia., and Green Construction Co., Des Moines, Ia. Bart W. Gillespie is project manager, assisted by the writer and H. E. Reichman as superintendent.



SEA-GOING TRACTORS leave Pt. Barrow pulling a sled train of supplies across an arm of the Arctic Ocean.

Present and Accounted For···A PAGE OF PERSONALITIES

NAMED CHIEF ENGINEER of Pennsylvania Department of Highways, THOMAS C. FRAME is in charge of $345,000 post-war program planned to provide 2,000,000 man-days of employment annually for 5 years. Mr. Frame, who has been in highway work for 30 years, served as chief engineer during previous administration.

AFTER 30 YEARS' SERVICE with Turner Construction Co., of New York, ELBERT K. ABBERLEY has been appointed chief engineer. He is a member of the American Society of Civil Engineers and of the American Concrete Institute.

ELECTED PRESIDENT of Constructors Association of Western Pennsylvania is MAX C. HARRISON, executive vice-president of Harrison Construction Co., Pittsburgh, which worked on preparation of site for atomic bomb at Oak Ridge, Tenn.

← NEW PRESIDENT of Central Branch, Associated General Contractors of America, is R. W. WELDEN of Welden Bros., Iowa Falls, Iowa, contractors. His company, organized in 1917, was among bridge contractors who constructed Alaska section of Alaska Highway.

→ NEWLY ELECTED PRESIDENT and chairman of Executive Committee of The Asphalt Institute, Washington, D. C., is GEORGE R. CHRISTIE, asphalt manager of eastern marketing division of Socony-Vacuum Oil Co., Inc.

DISTINGUISHED SERVICE MEDAL is presented to COL. WILLIAM F. HEAVEY (below, center), New York District Engineer, Corps of Engineers, by COL. C. L. HALL (left), North Atlantic Division Engineer. COL. H. A. KURSTEDT, Executive Officer, North Atlantic Division, reads citation which honors Col. Heavey's services as Commanding General of 2nd Engineer Special Brigade in Pacific Area.

NAMED DISTRICT ENGINEER in charge of newly established Sacramento Valley District of U. S. Bureau of Reclamation, JAMES K. CARR (below) has headquarters at Chico, Calif. Mr. Carr has been associated with Bureau for 10 years. He worked on planning and construction of Shasta Dam and was assistant to regional director.

Over 30 Cubic Yards on the Boom Point Sheaves *but* TIMKEN BEARINGS *Can Take it*

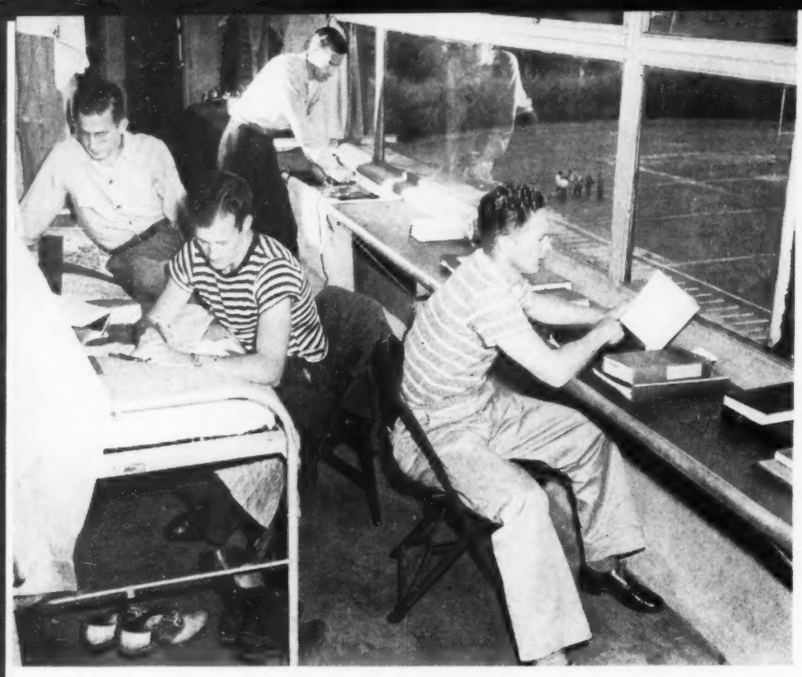
Timken Bearings are used in the main and swing machinery of these shovels as well as in the boom point sheaves.

No anti-friction bearing applications in modern power shovels are more important than those in the boom point sheaves. They must support safely the loaded dipper—and in most cases, the dipper stick as well; they must assure instant response to the hoist, with smooth operation under all load conditions; they must protect the cables and prolong cable life by preventing jamming of sheaves and consequent sliding of the cables in the grooves.

A striking example of boom point protection by Timken Bearings is afforded by the gigantic Bucyrus-Erie 950-B shovel shown above, with its huge dipper capable of taking from 30-33 cubic yards at a single bite. With the dipper filled to capacity, a total rope load of 190,000 lbs. is imposed on the Timken Bearing Equipped boom point sheaves—but they can take it; have been taking it dependably for years.

You need this boom point protection in your shovels; specify Timken Tapered Roller Bearings and be sure of getting it. And make sure the trade-mark "TIMKEN" is stamped on every bearing you use. The Timken Roller Bearing Company, Canton 6, Ohio.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS



STADIUM PRESS BOX is used as living quarters during housing shortage, by four ex-GI's attending Southeastern College at Hammond, La. Students installed heater, private bath, and clothes closets made at school. Press Assoc. Photo

PRIMITIVE METHOD for splitting rock is still in use in Bahia, Brazil. When burning wood has sufficiently raised temperature, water is thrown on hot rock, causing it to split.

Jaeger Machine Co. Photo

THREE-DECKER PARKING is provided by Hecht Co., Washington, D. C., department store, to relieve downtown traffic congestion.

Wide World Photo

JOB oddities

SAWDUST MOUNTAIN (below) is leveled off by bulldozer. These 20,000 tons of lumber mill waste will be converted into 1,000,000 gal. of alcohol. American Forest Products Industries Photo

WEDGE-SHAPED INSULATION (below) covers interior walls of sound laboratory of PETER J. MILLS, associate professor of physics at Illinois Institute of Technology, to make chamber so quiet that person standing inside can hear his own heartbeat. Wide World Photo

SKILLED HANDS PREFER...

ATLAS MORTAR CEMENT

The Satin of Masonry Cements

Masons and bricklayers swear *by*—not *at*—Atlas Mortar Cement. Smooth as silk, plastic as butter, it's a treat for the man with the trowel. Contractors, too, prefer it, for in the measure of mortar yield per bag it is always satisfactory.

Backed by years of research and complying with Federal and ASTM specifications, Atlas Mortar Cement is not only outstanding in plasticity, but also rates high in all other desirable characteristics —in volume change, water retention, durability, color and strength.

Write for new circular, "Masonry Cement Tables and Data." Address Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

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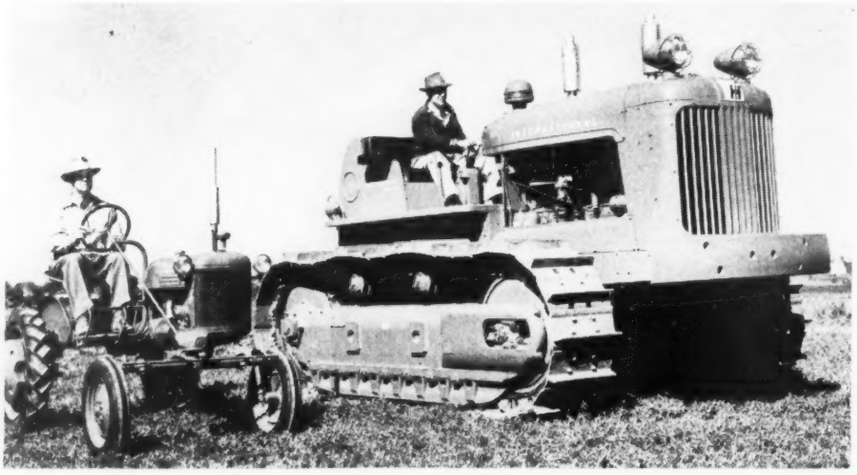
CONSTRUCTION EQUIPMENT NEWS

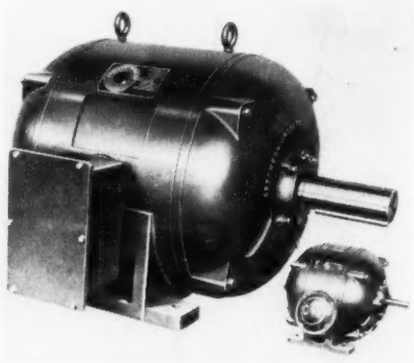
MAY 1946 REVIEW
of Construction Machinery and Materials



DIESEL CRAWLER TRACTOR in 130-drawbar hp. range weighs approximately 35,000 lb. and is largest ever built by this company. Features of new TD-24 include new type of steering, giving operator easy and positive control; use of special sealing and antifriction bearings in track rollers; and convenient mounting for all types of allied equipment. It has eight speeds, from 1.6 to 7.8 mph. Six-cylinder, full-diesel engine has built-in gasoline starting system, as well as electric starter. Tractor is 182¼ in. long and has 80-in. tread.—**International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.**

DUAL DRUM PAVER has fully automatic control which is said to cut charging, transfer and discharging time to minimum. Traveling mechanism of Multi-Foote Duomix 34-E paver is driven from single main shaft which also provides power for drums and skip hoist. Drive gears are fully inclosed and run in oil. There are two speeds forward and reverse. New type of tread plate used on crawlers is of such construction that it is impossible for stones to lodge in joints between treads to cause "nutcracker" action. Drive lugs are on alternate sides of adjacent treads, providing clean, smooth path that conforms to arc of roller with ball-and-socket action that distributes bearing pressure evenly, regardless of ground conditions. Transfer and discharge chutes are rotary type, requiring only quarter turn from completely shut to wide open positions. Drums are both of double-cone design. On pilot test paver turned out 10-percent oversize batches (37.4 cu. ft.) every 35 sec.—**Foote Co., Inc., Nunda, N. Y.**

AC SQUIRREL-CAGE PROTECTED TYPE MOTOR, ranging from 1 to 200 hp. and rated 40 C. rise, full load continuous duty with 13 percent service factor, provide full protection against dripping liquids, falling metal chips and other foreign matter. Centrifugal bearing seal permits use of softer



grease for better lubrication and longer bearing life. Rotors in which base, fans and end rings are cast from aluminum alloys are employed for some sizes while larger models have copper bars with brazed-on fans and end rings. Stator coils of all sizes are protected by Vinylastic insulation.—**Crocker Wheeler Div., Joshua Hendy Iron Works, Ampere, N. J.**

HEAVY-DUTY DRILL CHUCK employs tough web of neoprene synthetic rubber to keep jaws in better alignment and permits one chuck to take wider range of drill sizes. In its function resilient material replaces flexible spring steel collet shank of traditional single purpose type of drill chuck. Rubber is bonded to steel jaws and passes through anchoring holes in them, making collet or inner socket of chuck compact, conical unit. Invented by Arthur M. Stoner, vice-president, collet is tightened by screw mechanism which forces it forward into smooth funnel-shaped nose of chuck. As soon as chuck is loosened for changing drills neoprene web pushes jaws apart and releases drill shank. Compound of duPont neoprene was selected for use in chuck because of its oil resistance, its low degree of permanent deformation or set and its all-around toughness.—**The Jacobs Manufacturing Co., Hartford, Conn.**

45 SECONDS DOES IT WITH ADAMS

From Ditch Cuts To Bank Cuts Without Mechanical Adjustments

★ **It's a fact!** With Adams Motor Graders you shift from ditch-cutting to bank-cutting positions (or vice versa) *in just 45 seconds—with blade centered on circle—without changing "average" setting of telescopic blade lift links.*

The importance of this advanced Adams feature can hardly be exaggerated. It means that positive power-operated blade controls accurately place the blade in virtually any desired position—*without stopping grader—without operator leaving his seat.* This spells *faster operation—better work—more work per day.*

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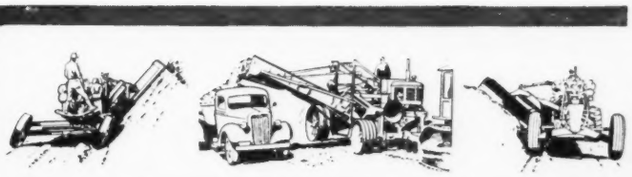
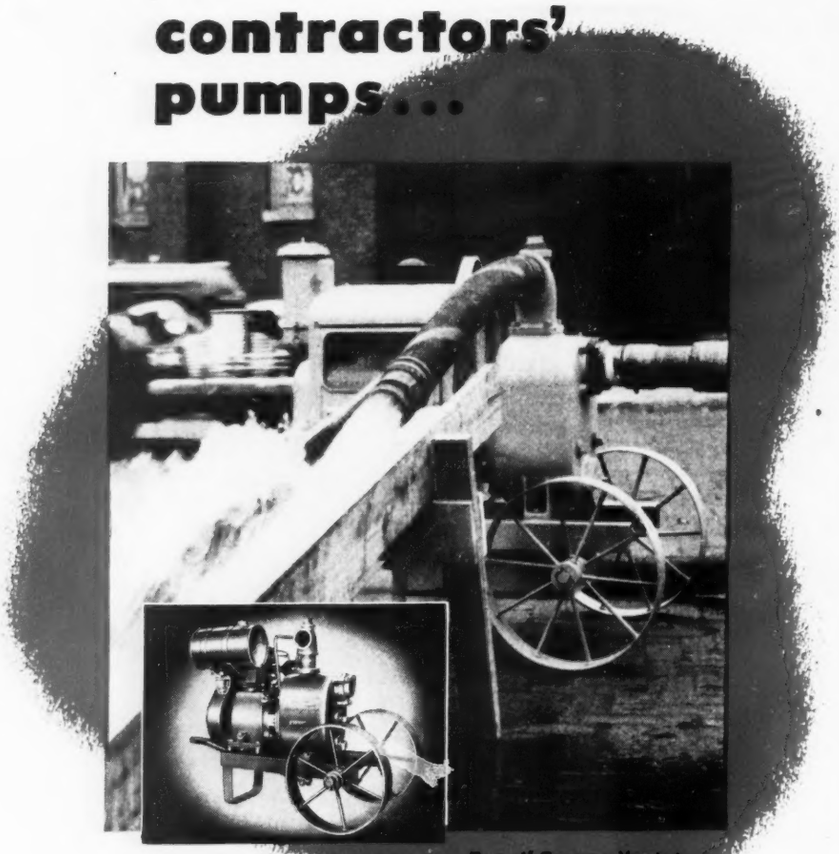


ADAMS

ROAD BUILDING AND EARTH-MOVING EQUIPMENT

contractors' pumps...



Top—4" Carver self-priming centrifugal pump pumps 20,000 g.p.h. on sewer construction job.

Middle—A 2" Carver Pump is a handy size that you can use on dozens of medium-sized jobs.

Bottom—This 78-lb. portable Carver pump is ideal for emergency dewatering jobs on street, sewer, utility and construction jobs.

that give you new low pumping costs

Carver self-priming centrifugal pumps can stay on the job longer at top efficiency—always fast-priming and non-leaking—because the long-life mechanical seal keeps water in and air out even after years of the toughest service. The special carbon-tungsten steel used in the impellers and liners is tough and long wearing—cuts time out for repairs and maintenance to the minimum. The combination of low first cost and low maintenance cost means lowest cost per gallon of water pumped. Offered in a wide range of capacities from 3,000 to 200,000 g.p.h. Send for Bulletin CPC-T.

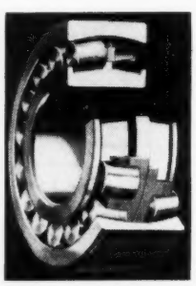
Dealers in all principal cities

CARVER PUMP COMPANY • Muscatine, Iowa

CARVER CENTRIFUGAL Certified PUMPS

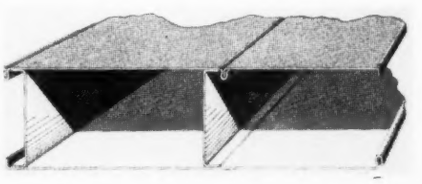
STEEL ALL - WELDED HAND TRUCK has 14x9x3/16-in. platform plate. Capacity is 500 lb. Channel iron frame is ⅛x½x1¼ in. Balanced

design places load on wheels and not on trucker. Can be operated with one hand in close quarters.—**The Schmidgall Mfg. Co., 307 Cass St., Peoria 2, Ill.**



SELF - ALIGNING SPHERICAL ROLLER BEARING has two-directional thrust, high radial capacity, high thrust capacity and unit construction for easy installation. It is produced in full range of sizes from 1.5748-in. bore upward.—**Torrington Co., South Bend 21, Ind.**

FACTORY-FITTED BUILDING PANEL can be used for walls, partitions, roofs and floors. Units are box beams of sheet steel, joined securely to form smooth floor surface above and neat, smooth ceiling beneath, with duct space between for pipes and wires. Design

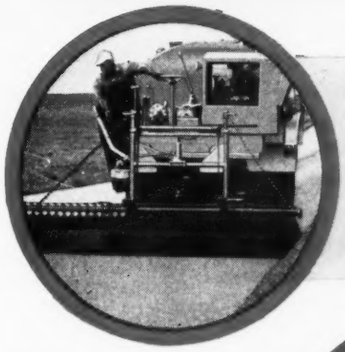


provides flat panels of sheet metal complete with channel type ribs, assembled at factory. There is variety of types and considerable range of sizes. Sections are uniform and come to job cut to specified lengths ready to install.—**Detroit Steel Products Co., Detroit, Mich.**

MAINTENANCE BEGINS

Proper and effective maintenance of pavements is fully as important as proper design and construction procedure. As is true with all other types of construction, maintenance must begin the day after construction is completed, and must be continuous throughout the year.

The primary objects of maintenance are: (1) keep a smooth surface, assuring quick and effective runoff; (2) keep the underlying base or subgrade dry; and (3) maintain contact between pavements and underlying courses. This requires effective slopes leading to drainage outlets, one hundred percent waterproof surface, and continual correction for consolidation or movement in supporting courses below. There is no substitute for preventive maintenance and constant patrolling is essential in order to detect and correct today those conditions which would progress into failures next year.



PRESSURE DISTRIBUTORS

Used in construction and maintenance of highways, streets and airports. Spraybars up to 24 feet in length.

MAINTENANCE DISTRIBUTOR

Drives material through Spray Bar or through Hand Spray. For maintenance and patch work or new construction.

TAR KETTLE

Can be equipped with either Hand Operated or Gas Engine powered Pump for use with Hand Spray.

Standard Steel Works TRADE MARK

OTHER PRODUCTS

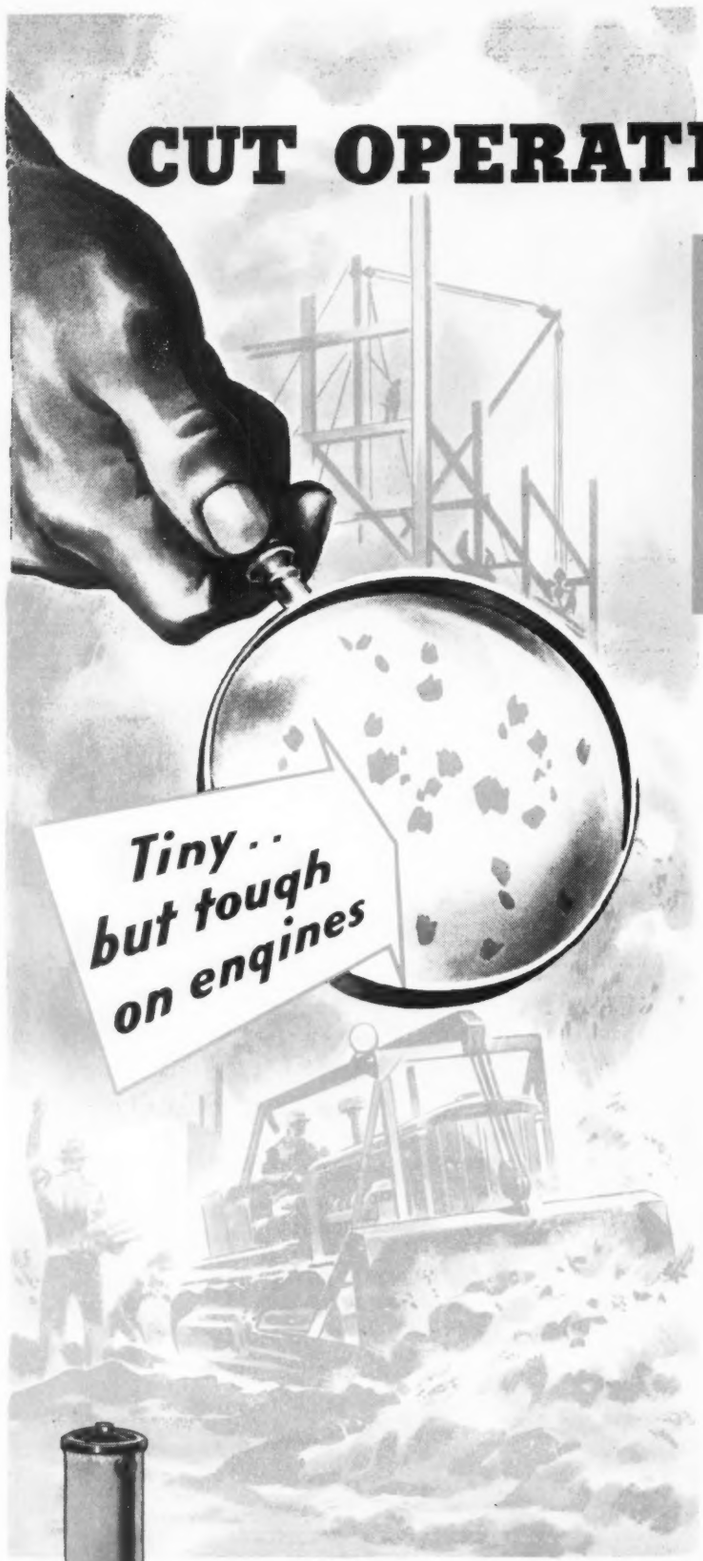
Emulsion Spray Units • Kerosene and Distillate Burners • Supply Tanks • Tool Heaters Asphalt Tools • Street Flushers

SALES OFFICES IN PRINCIPAL CITIES

Standard Steel Works

NORTH KANSAS CITY, MO., U.S.A.

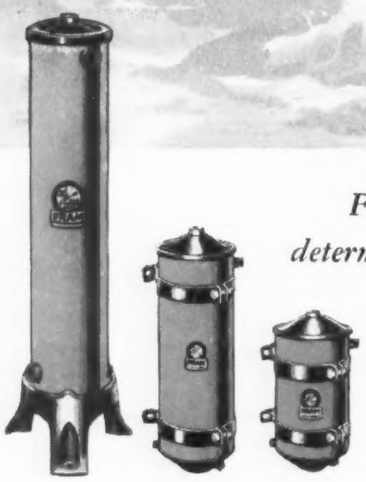
CUT OPERATING COSTS



with FRAM Oil Filters!

It's a rare construction job that doesn't fill the air with dirt, dust, grit. Sucked into an engine, these abrasives wear away moving parts, cause overhauls, breakdowns and repairs. At the same time, sticky sludge, a constant enemy of internal combustion engines, can literally "gum up the works" to increase wear, decrease efficiency. But with a heavy-duty Fram Filcron oil filter, dirt, dust, grit, carbon and sludge are filtered out to save overhauls, repairs, and costly delays . . . to lengthen the life of engines!

Fram filters are engineered for the efficient, economical filtration of lubricating oil on practically any type of gasoline, gas or Diesel engine or with any conventional type pressure lubricating system. These filters contain the amazing Fram Filcron cartridge, which proved itself an outstandingly efficient filtering agent in widespread Army and Navy use during the war. The Filcron cartridge removes impurities as small as one micron (.000039 of an inch) in size, thus filtering out dirt, dust, grit, carbon and abrasives that enter the lubricating oil. With these contaminants removed, engine wear is reduced, repairs, overhauls and money are saved. For information on Fram Filcron filters, write: Fram Corporation, Providence 16, R. I. *In Canada:* J. C. Adams Co., Ltd., Toronto.

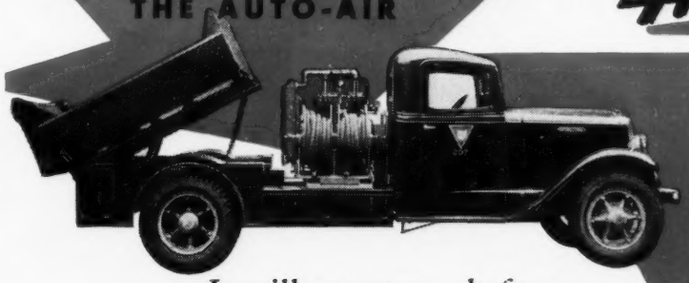


Fram Engineering Service and Laboratory are available in determining the proper installation for both lube and fuel oil filters.

FRAM Filcron Filter

THE MODERN OIL & MOTOR CLEANER

ONLY 1/3 OF THE TRUCK IS OCCUPIED BY THE AUTO-AIR



BEFORE YOU BUY *Any* COMPRESSOR...

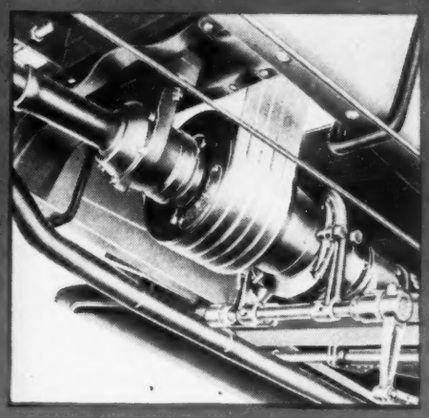
investigate the Davey AUTO-AIR

It will pay you—before buying any compressor—to carefully consider the Davey Auto-Air.

In 60, 105, 160, 210 or 315 cfm capacities, the Auto-Air is suitable for mounting on any standard truck. It is driven from the truck's engine through the Davey Heavy Duty Power Take-Off . . . moves from job to job at truck speeds.

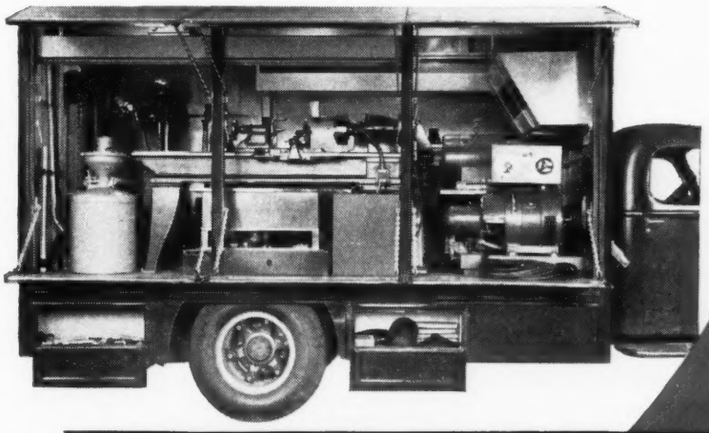
Write, wire or phone today for Catalog E-172

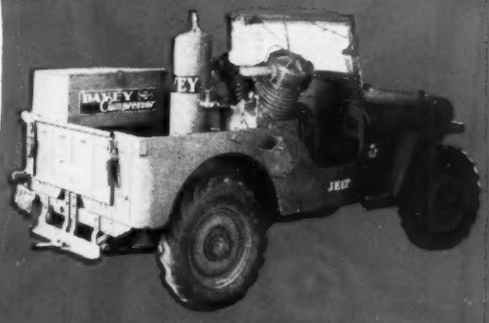
P&P-100



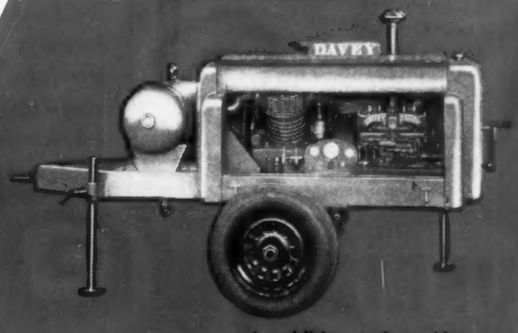
Heart of the Auto-Air is the Davey Heavy Duty Power Take-Off.

The Davey Mobile Machine Shop includes equipment ordinarily found only in large central service shops.





A perfect companion for the Model 60 Auto-Air is the Willys "Jeep".



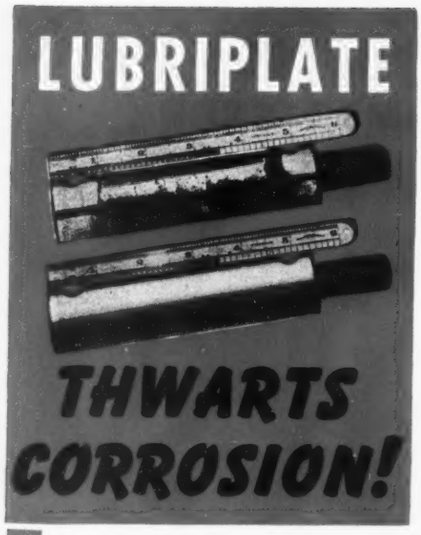
In addition to Auto-Airs, Davey builds a complete line of trailer units.

DAVEY

DAVEY COMPRESSOR CO. • KENT, OHIO

There are Davey Dealers in Principal Cities

(Advertisement)



These originally identical shackle pins from a ten ton truck were used in a comparative lubrication test for a period of one year. A well known conventional lubricant was used on the upper pin. Note the pitting from corrosion, also the excessive wear. LUBRIPLATE was used on the lower pin. Its surface remained bright and true as when the test began, proof that LUBRIPLATE is different . . . better.

LUBRIPLATE

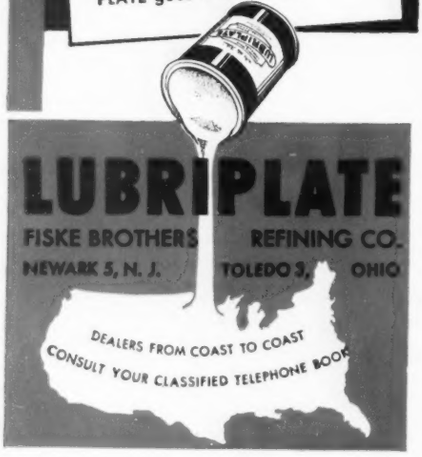
Lubricants definitely reduce friction and wear to a minimum. They lower power costs and prolong the life of equipment to an infinitely greater degree. LUBRIPLATE arrests progressive wear.

LUBRIPLATE

Lubricants protect machine parts against the destructive action of rust and corrosion. This feature alone puts LUBRIPLATE far out in front of conventional lubricants.

LUBRIPLATE

Lubricants are extremely economical for reason that they possess very long life and "stay-put" properties. A little LUBRIPLATE goes a long way.


LUBRIPLATE
FISKE BROTHERS REFINING CO.
NEWARK 5, N. J. TOLEDO 3, OHIO
DEALERS FROM COAST TO COAST
CONSULT YOUR CLASSIFIED TELEPHONE BOOK

YOU CAN PREVENT RUST AND CORROSION

There is no need to dwell upon the ravages of rust and corrosion nor upon the tremendous tolls it takes every year from industry. We know it. The important thing is how to prevent it.

We also know that an unprotected ferrous metal surface if exposed to moisture will rust and that many non-ferrous metals will corrode in the presence of certain acids. The whole trick in preventing rust and corrosion is to keep the elements that cause rust and corrosion away from the metals.

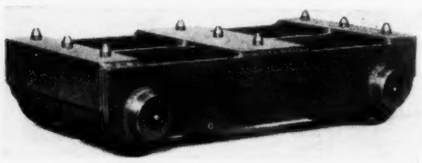
In machinery it is often impossible or difficult to paint or enamel all metal parts that are subject to this form of damage. This is evident in the case of bearing surfaces and adjacent surfaces that are coated with oil or grease. Yet ordinary oils and greases do not offer complete protection against rust and corrosion.

It becomes obvious that when rust or corrosion regularly occurs, to prevent it a lubricant must be used that resists the conditions that cause it. That is one of the big reasons why LUBRIPLATE Lubricants are so widely used in all kinds of industries.

LUBRIPLATE is a tried and tested anti-rust and acid-resisting lubricant that can protect against the formation of rust and the destructive action of corrosion on bearings, gears, cams and other metal surfaces. And LUBRIPLATE lubricants provide superior lubrication as well. Possessing extra film strength, LUBRIPLATE lubricants keep metal surfaces apart, reduce heat and friction to a minimum, and arrest progressive wear.

A copy of "THE LUBRIPLATE SERVICE HANDBOOK" containing valuable information on the subject of lubrication will be furnished without charge by writing Fiske Brothers Refining Company, Newark 5, N. J.

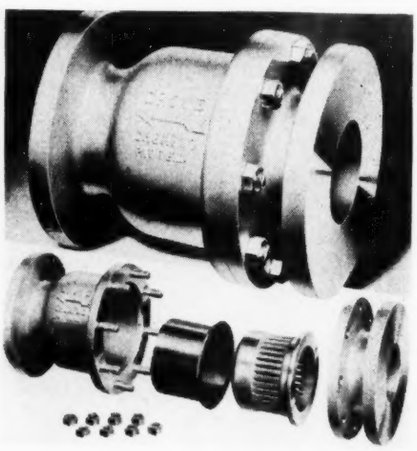
DOLLIES equipped with all-steel rollers 3¾ in. in diameter operate in pairs to shift loads from 10 to 12 tons. Sturdy steel cleats imbed into wood skids and carry load only few inches



from floor. Each dolly is 18½x10½ in. and 4 in. high. Roller bearings are lubricated through Zerk fittings. If inverted, Skid-Rol can be used as standing dolly for moving steel beams or girders. — **Techtman Industries, Inc., 828 N. Broadway, Milwaukee, Wis.**

FLOOR PAINT with chlorinated rubber base is again available. Paratex concrete floor coating helps withstand action of lime and moisture in concrete and protects iron and steel from rusting.—**Truscon Laboratories, Inc., Caniff & Grand Trunk R.R., Detroit 11, Mich.**

CHECK VALVE has synthetic rubber tube, stretched over slotted cup-shaped metal core, which expands to open and contracts to close. Tendency to establish pressure impulses, shock or water hammer through flow line is eliminated by instant closing of tube on balanced flow, prior to com-



mencement of back flow. Uniform and constant spring rate of flexive tube keeps inertia from being set up to cause operation beyond flow requirements. Self-compensating and wear-resistant factors make unit suitable for handling highly corrosive and erosive air, gases and liquids. **—Grove Regulator Co., 6508 Green St., Oakland 8, Calif.**

SCHRAMM'S COME *ALL* SIZES!

Yes, Schramm Air Compressors are available in a variety of sizes—all designed to meet the needs of construction and contracting engineers.

The overall picture is this. You get all the air you want with Schramm Air Compressors.

Specific features of Schramm Compressors are (1) 100% watercooled (2) forced feed lubrication (3) mechanical intake valve (4) compact, lightweight!

Illustrated are only three of many Schramm models. They range in size up to 600 cu. ft. displacement, and include stationary units as well as portable.

We invite you to write today for full details on Schramm Air Compressors. They offer you many savings because of their rugged design, their ability to give you air easily, economically!

SCHRAMM
INC.
THE COMPRESSOR PEOPLE
WEST CHESTER
PENNSYLVANIA

#60

WHAT SIZE
SCHRAMM
AIR COMPRESSOR
FITS YOUR NEEDS?

#315

#105

"We're using KOTAL Mixes All Year 'Round!"

There's a world of difference between ordinary cold mixes and KOTAL Cold Mixes! KOTAL Master Mixes are tougher; more stable; resist stripping; handle easier and last longer.

KOTAL Master Mixes are known as the "all-seasons pavement." They lay equally as well in cold, wet weather as in hot, dry, summer weather. KOTAL Master Mixes can be "stock-piled." Whether your plant is running or not, KOTAL Master Mixes will be available for the needs of your customers.

Keep your crews busy—Spring—Summer—Fall—Winter—by using KOTAL Master Mixes.

IT'S THE KOTAL PROCESS THAT MAKES THE DIFFERENCE

Eight Working Features of KOTAL Master Mixes

EASY TO USE. Quickly mixed, ready to lay. No preheating or drying.
STABILITY. Cure quickly and permanently. Do not shift, ravel or pick up. Open sooner to traffic.
WORKABILITY. Do not adhere to equipment. Work easily.
LONG-TERM STOCK PILES. Can be stock-piled for many months without losing workability.
SAVE TIME. Quickly made stock piles ready for immediate use without frequent fresh mixes.
SAVE LABOR. Actual road records prove fewer labor hours required.
SAVE MONEY. Savings in time and labor mean economies in road costs.
EXTEND PAVING SEASON. All-weather workability permits more months of operation.

Write for your copy of booklet which tells the story of KOTAL Master Mixes. We will also send you the name of your nearest supplier.

MASTER MIXES KOTAL **KOTAL COMPANY ★ 52 Vanderbilt Ave. ★ New York 17**

KOTAL *Master Mixes*

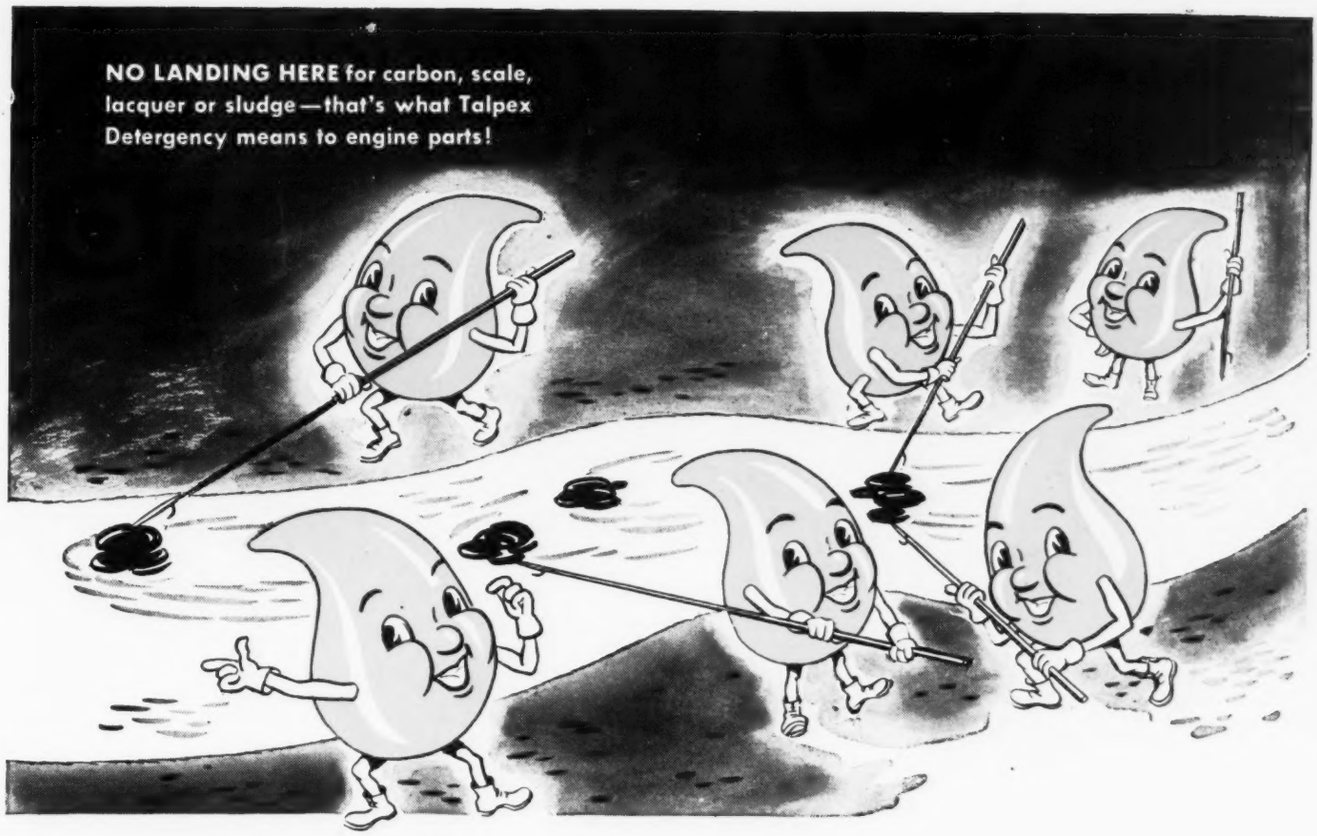
The Advanced All-Weather Aid in Building Better Roads

STREET LIGHTING CONTROL insures required illumination regardless of fluctuations in weather conditions and twilight hour. "Sun Switch" is composed of standard amplifier tubes, photo-electric cell and relay with special tungsten alloy contacts. Operating unit is compactly built on chassis to which non-rusting aluminum housing is attached by three screws. Housing with chassis is fastened to permanently wired base with single 30-deg. rotary turn which provides "plug in" connection and weatherproof joint. Overall dimensions are 9¾x4⅛ in. and weight is 4½ lb.—**The Ripley Co., Torrington, Conn.**

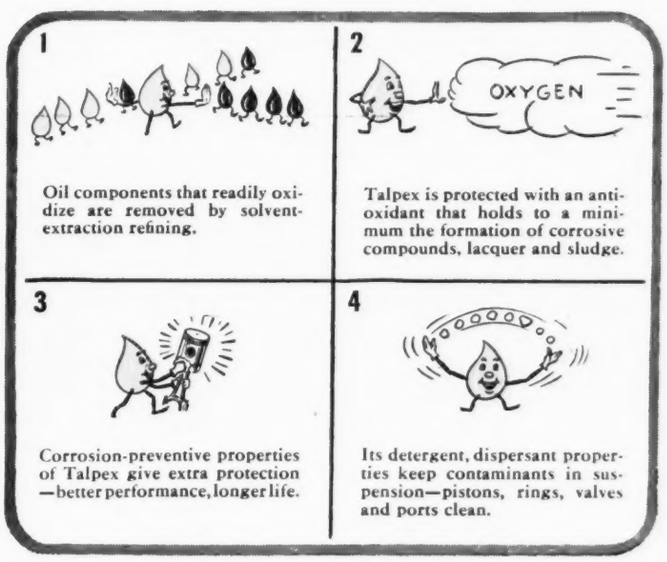
NEW TYPE CYLINDRICAL "CAMEL" of laminated oak, used to prevent damage to ships while lading, will have wide use by shipping, towing and wharfing concerns if its claims to superiority over raft-type camel are borne out. New camel consists of series of split rings of laminated oak, joined by strakes of same material so that it absorbs not only compressive action but also longitudinal rack. Used between ship and wharf or between ship and barge or lighter, wherever cargo is laded or unladed. Circular form obviates danger of upending. Proportion of weight

to strength is small, thus permitting easy handling. Light enough to be carried by davits or boom on wharf or barge. Repairs and replacements are easily effected. Largest model is 26 ft. long with overall diameter of about 6 ft. 2 in. Consists of 24 rings, 9 in. wide by 5½ in. deep, with outside diameter of 5 ft. Rings are built up of ¼-in. laminate. Split of

(Continued on page 127)



THESE FOUR *TALPEX* PERFORMANCE FACTORS SAFEGUARD HIGH-SPEED DIESELS


1
Oil components that readily oxidize are removed by solvent-extraction refining.
2
OXYGEN
Talpex is protected with an anti-oxidant that holds to a minimum the formation of corrosive compounds, lacquer and sludge.
3
Corrosion-preventive properties of Talpex give extra protection—better performance, longer life.
4
Its detergent, dispersant properties keep contaminants in suspension—pistons, rings, valves and ports clean.

TALPEX has detergent properties that keep such contaminants as sludge and lacquer from depositing on pistons, rings, valves and ports. Not able to land at their favorite spots, they circulate with the oil until drained from the engine.

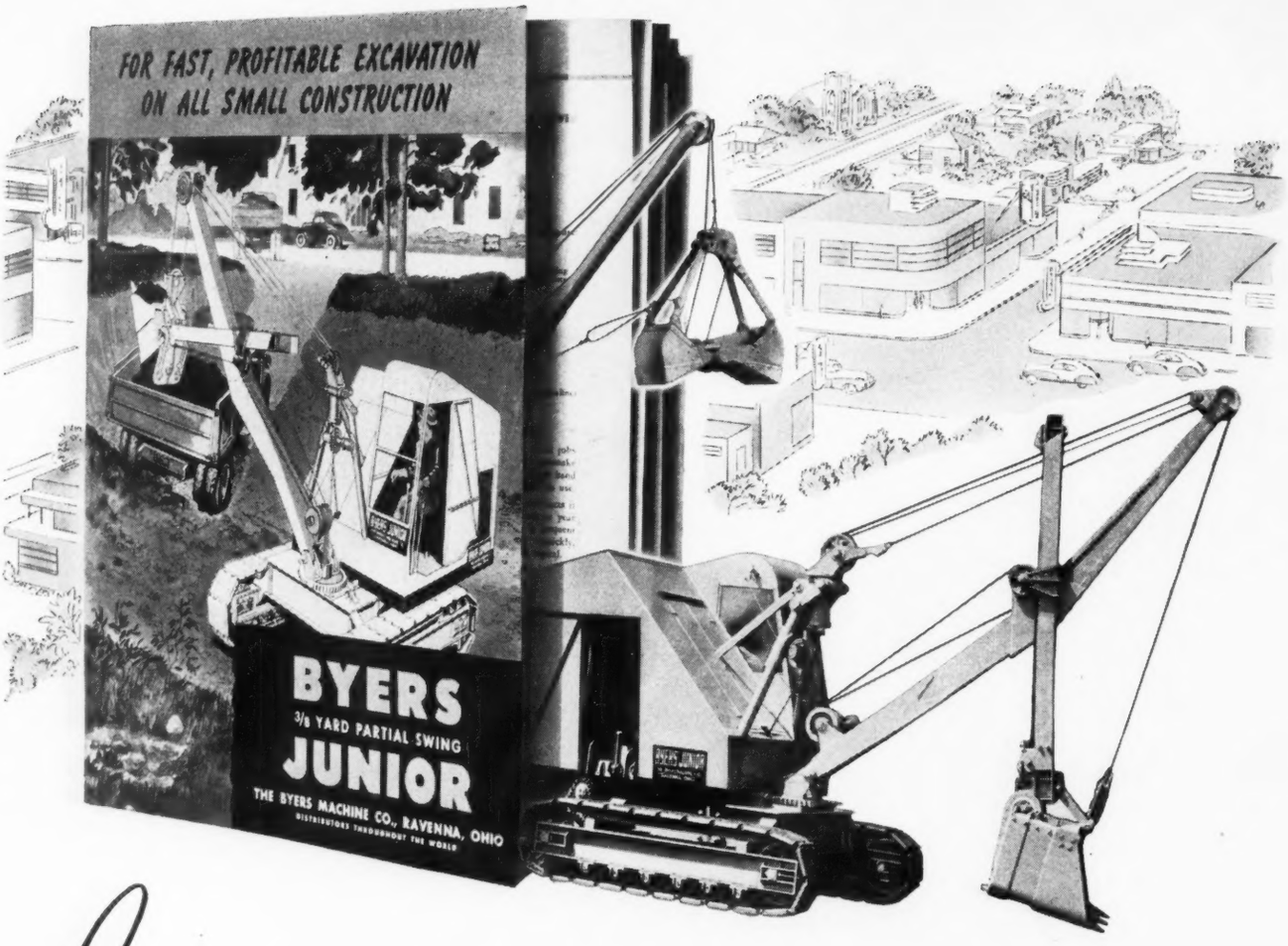
If the oil you are now using doesn't have detergent properties—if it hasn't been doubly protected against oxidation—if it doesn't have special corrosion-preventive properties—then you had better change to Talpex.

The Shell Lubrication Engineer will give you sound advice about the lubrication of *any* type of Diesel, whether slow, medium, or high speed.

Write for a copy of Shell's booklet, "The Fundamentals of Diesel Lubrication." Shell Oil Company, Incorporated, 50 West 50th St., New York 20, N. Y. or 100 Bush St., San Francisco 6, Calif.

SHELL

SHELL DIESEL LUBRICANTS



Investigate this New Small Shovel and Crane

The pages of this complete catalog will show you the ways in which Byers JUNIOR, the flexible ⅜-yd. shovel and crane, will make money for you.

Small contractors, construction or excavating companies, returned service men now starting in the construction industry . . . will profit by weighing the many outstanding advantages of the new Byers Junior. County engineers, township road superintendents, state highway engineers, will find in this versatile excavator the answer to many earth moving and material handling problems.

Here's a full ⅜-yd. capacity shovel, crane, clamshell, dragline and back hoe, fast, powerful, highly mobile, capable of doing a big day's work. Built by the most successful manufacturer of small excavators of the partial swing type, Byers JUNIOR has a long and experienced background of successful operation.

Don't miss this catalog. Write for it today. No obligation.

THE BYERS MACHINE CO., Ravenna, Ohio

Distributors throughout the World

BYERS 3/8 Yd. JUNIOR

(Continued from page 124)

4½ in. provides shock absorber against compressive action. Number of pounds pressure required to close this gap can be accurately predetermined. Bottom is counterweighted to float split uppermost. Rings, spaced 3½ in. apart, are joined by 16 longitudinal strakes fastened by ¾-in. bolts to alternate rings. This method of fastening permits play which absorbs longitudinal rack. Teco timber connectors are used in two 6x6-in. strakes adjacent to split. Camel weighs 6 tons and will absorb load of 250 tons without crushing. — **Gamble Bros., Inc., Louisville, Ky.**

PNEUMATIC RIVETING HAMMER features light weight, perfect balance, compact size, hand-fitting grip design, ease of operation and controllable speed. It becomes cooler as it works harder because of expansion of air which is exhausted from front at operating head. Barrel is of one-piece, all-steel construction with reinforced end to take piston impact without breaking. Piston is made of hardened alloy steel. Air throttling regulator valve permits adjustment to accommodate all kinds of riveting, even on plain or

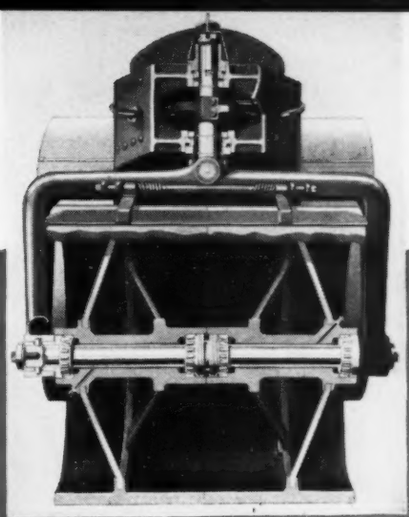
heat-treated alloy aluminum, brass or soft iron. Beehive retainer spring is easily screwed on with fingers. Available with offset or grip handle in three sizes for light, medium or heavy riveting.—**Ideal Commutator Dresser Co., 4102 Park Ave., Sycamore, Ill.**

BRAKE CONTROL UNIT for Type HM crane-bridge brake provides automatic "cushioned" emergency stops when power fails or crane runs beyond safe limits on runway. This brake control unit permits free use of foot-controlled hydraulic brake for service stops and at same time holds parking-brake setting spring compressed and ready to apply brake in emergency, such as over-running of limit switch or power failure. In

(Continued on page 130)

"OUT IN FRONT"

FOR BETTER JOBS WITH MORE PROFIT



MADE IN 6·7·8·10 and 12 TON SIZES

And speaking of "out-in-front" performance--take a look at the front-end construction of this GALION Three-Wheel Roller, and note these outstanding features that mean ease of handling, economical operation, and long life.

1. Rolls are assembled with only .005 of an inch clearance which is constantly maintained. This "close-fit" retains all the advantages of a single roll while giving the worthwhile advantages of a split roll.
2. Rolls float on four large adjustable tapered Roller Bearings.
3. Mounting of the heavy king pin at top and bottom on Roller Bearings assures easy steering under all road conditions.
4. Yoke is sturdy steel casting heavily reinforced at points of strain.
5. Yoke is connected to heavy forged steel king pin by a swivel joint giving full flexibility.
6. Rolls are made of a special, tough, fine grain cast iron. The heavy steel spokes are securely anchored in rim as it is cast, giving the effect of one-piece construction.

Complete information given in Catalog No. 280. Write for your copy and names of nearest Distributors.

The GALION IRON WORKS & MANUFACTURING CO.
GALION, OHIO

GALION IRON WORKS
GRADERS · ROLLERS

Compare these SHORT HAUL TOURNAPULL job records with your crawler output

Authentic job data proves Tournapull speed will move more dirt for you . . . at ANY range

On short hauls like these, Tournapulls give you increased production because: (1) rubber-tired 2-wheel traction gives you faster maneuverability . . . (2) high ratio of horsepower to deadweight gives quick acceleration to high gear . . . (3) Tournapull speed, 2 to 3 times faster than the fastest crawling tractors, saves time on short as well as long hauls . . . (4) fewer moving parts mean less wear, less down time, more work time. You'll find that Tournapull ability to move dirt at the lowest-net-cost-per yard on both short and long hauls will increase your profits on any type of dirtmoving for highways, airports, dams, levees, railroads, landleveling, stripping, etc. Tournapulls are your safest insurance for future earnings. Your LeTourneau Distributor has complete facts. Ask him to show you.

300' one-way haul

On grading for building site in Fort Wayne, Indiana, J. C. O'Connor & Sons, Inc., used 4 Tournapulls. Stripping dry sod, rigs got heaped loads in 0.6 minutes, delivered 21 loads each per 50-minute hour . . . kept up this high-speed production 9 hours per day. Tournapulls drove 230 miles to the job from Bloomington, Illinois, in 20 hours.

300 to 600' one-way haul

"Our Tournapulls moved more yardage on hauls as short as 300' than any other piece of dirtmoving equipment on the job", says Sal Augustine of Augustine Construction Co. Job: 250,000 yd. Queens Lane Reservoir in Philadelphia. Time study showed each Tournapull averaged 1500 pay yards per 8-hour day on 600' one-way haul - - double production of crawler-drawn scrapers working on same cycle.

525' one-way haul

Working in soggy clay, wet from several weeks of rain, 2 Tournapulls made round trips every 4½ minutes on 525' one-way haul. These rigs completed cycles fast because big-tired traction and flotation kept them rolling through the wet, sticky fill . . . positive load ejection spread soggy clay fast. The job: Talbott and Myers Construction Co.'s 50,000-yard grading contract at Lexington, Kentucky.

550' one-way haul

12 trips per 50-minute hour — net hourly production 288 pay yards. That's the kind of yardage R. C. Micotto's 2 Tournapulls moved for him in heavy yellow clay on 125,000 yard landleveling project for a real estate subdivision near St. Louis. This entire job was a short haul operation . . . almost all dirt hauled under 800'. Production like this is proving that Tournapulls can economically handle short haul dirt.

450' one-way haul

"Two Tournapulls maintain average production of 2000 pay yards per 10-hour day", says Superintendent Lassiter, on 50,000 yard stripping contract for chalk mine at Macon, Georgia. Working in hard, damp fullers earth and red clay, each Tournapull delivered 1/3 more yardage than similar-capacity, tractor-drawn scraper working on same 900' cycle. Contractor A. L. Riley's Tournapull operation proved so successful that he was given a new stripping contract for additional 60,000 yards.

E TOURNEAU

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JOB-PROVED Over 4300 Built and Shipped

TOURNAPULL

Trade Mark Reg. U. S. Pat. Off.

POWER TO GET COST PER YARD

BLAW-KNOX STEEL FORMS WIN RACES

Races against time and penalties—

Races against personnel uncertainties—

Races against weather and unforeseen delays—

Build with Blaw-Knox Steel Forms and you soon establish a reputation for winning races—a reputation that will bring you more jobs and more profitable contracts.

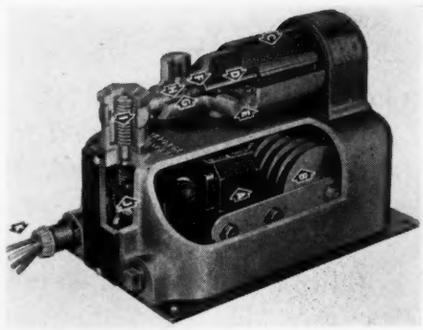
Whether your job is large or small, you should investigate the advantages of Blaw-Knox Steel Forms, and you will want to use the time-saving money-making methods explained in the Blaw-Knox Steel Forms Bulletin No. 2035.

Ask for This Bulletin No. 2035 On Your Letterhead

For the man who builds **TUNNELS, SEWERS, WALLS** *and other concrete structures*

BLAW-KNOX DIVISION
of Blaw-Knox Company
2086 FARMERS BANK BUILDING
PITTSBURGH, PENNA.

BLAW-KNOX STEEL FORMS



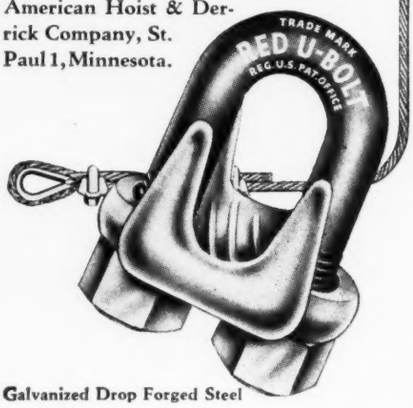
(Continued from page 127)

either event "cushioned-stop" valve of control unit applies brake at predetermined rate to bring bridge and its load to quick but smooth stop without undue swinging of suspended load. Brake is automatically applied when operator pulls main-line switch, which he does on taking crane out of operation. To release brake operator merely makes full application of foot pedal. This compresses brake-setting spring and control unit holds it compressed until electric circuit to unit is opened. With this control unit installed in system, operator has hydraulic brake for service stops, spring-set brake for parking, plus automatically applied "cushioned-stop" brake for emergencies, all in one brake.—**Wagner Electric Corp., 6400 Plymouth Ave., St. Louis 14, Mo.**

Because they're *safer*, always use

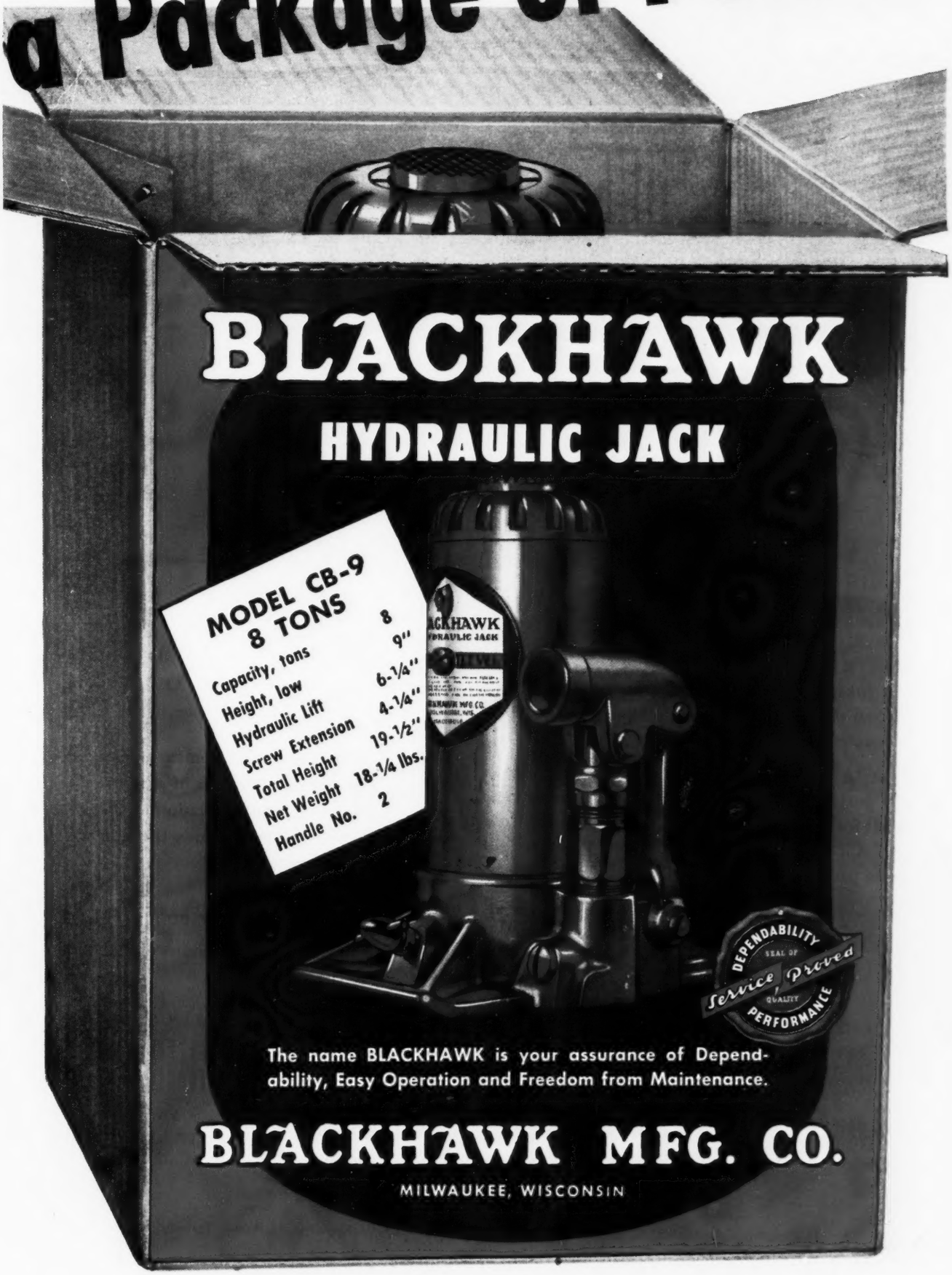
CROSBY CLIPS

Specify Crosby Clips—it's your best choice, and they're available through dealers everywhere. A product of the American Hoist & Derrick Company, St. Paul 1, Minnesota.



Galvanized Drop Forged Steel

a Package of Power



CONTRACTORS: When you use C.I.T. funds to buy construction equipment, a financial bridge is erected that makes it easier for you to acquire an adequate assortment of machinery.

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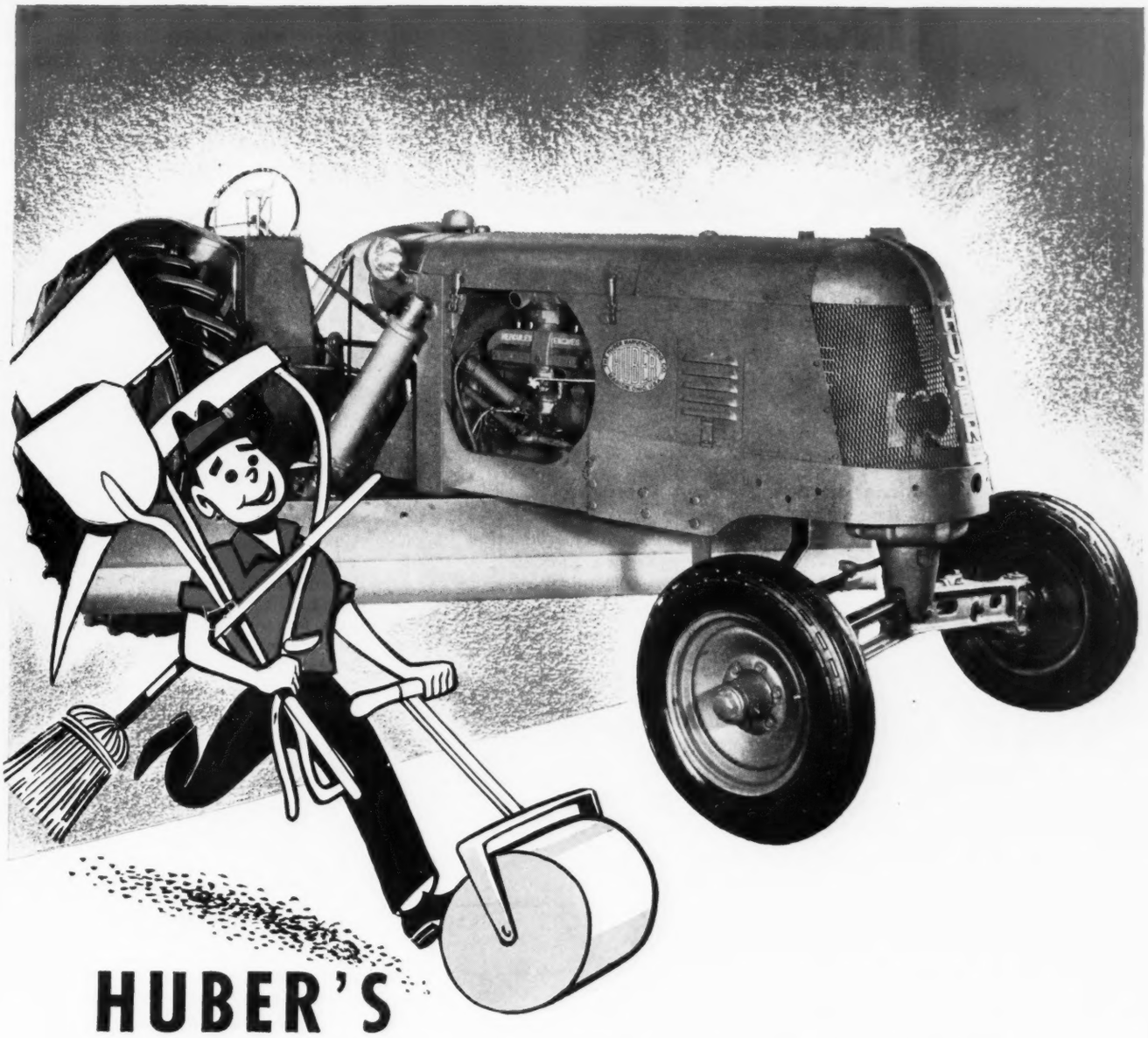


HUBER'S

ONE-MAN MAINTENANCE CREW

Wouldn't you like to have a street, highway, and airport maintainer that readily becomes a mower, bulldozer, snowplow (V-type or one-way), broom, patch-roller, and lift-loader? You can get this type of a versatile worker in a HUBER MAINTAINER—all "wrapped up" in a single investment. We have nicknamed it the "HUBER ONE-MAN MAINTENANCE CREW" because only one man is needed to put it through its many paces. Put the HUBER MAINTAINER high on your MUST SEE list as soon as your local distributor gets one. You'll be glad you did.

THE HUBER MFG. COMPANY • MARION, OHIO, U. S. A.

HUBER MAINTAINER

ALSO 3 WHEEL AND TANDEM ROLLERS

INCREASE YOUR PROFITS

with combined superiority

Perfection Platform Stake Bodies and Hydraulic Booster Hoists reach their *highest efficiency* when operating TOGETHER. As a *combined* unit they offer you unequalled ease of installation, performance, and service thru such features as . . . rugged, composite steel and wood bodies with adjustable sills . . . application of power at a point near center of load . . . over-all distribution of lift under entire load . . . anti-sway, double, compound type lift arms . . . extra-powerful, smooth, fast-action hoist.

Perfection Hydraulic Booster Hoists are also adaptable to any make of platform body having formed steel channel or wood longitudinal sills. Likewise, Perfection Platform Stake Bodies are adaptable for use with other makes of platform booster hoists. On such installations, PERFECTION units in themselves will meet the most exacting standards.

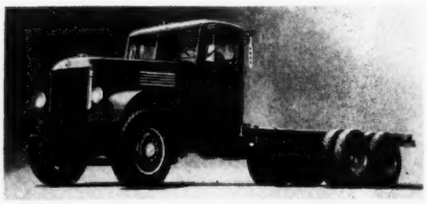
For all makes and models of trucks. Write for literature and names of nearest Distributors.

THE PERFECTION STEEL BODY CO.
GALION, OHIO

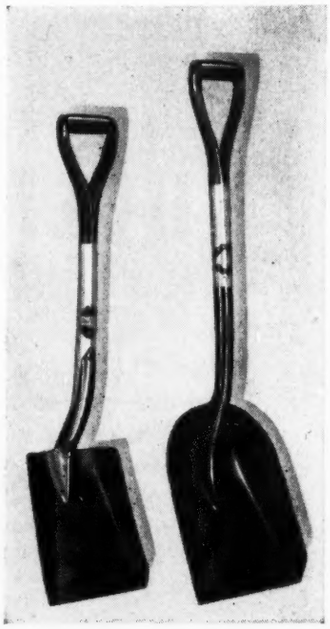
Perfection Platform Stake Bodies are also mountable as stationary units.

PERFECTION
TRUCK BODIES AND HOISTS

HEAVY-DUTY TRUCK is six-wheel vehicle with tandem-drive rear axle and gross vehicle weight rating of 40,000 lb. "Western Freighter" highway transport model W-4064-H has heavy-duty chassis powered by choice of five optional engines. Equipped with air brakes front and rear of



ample size and capacity. Has semi-elliptic springs with full-floating rear spring suspension. Steering gear is of roller-bearing cam-and-twin lever type, outboard-mounted. Disk-type wheels are standard. Rubber-cushioned auxiliary transmission mounting facilitates easy removal of entire unit for servicing. Engines are three-point mounted and rubber-cushioned. **—Motor Truck Division, International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.**



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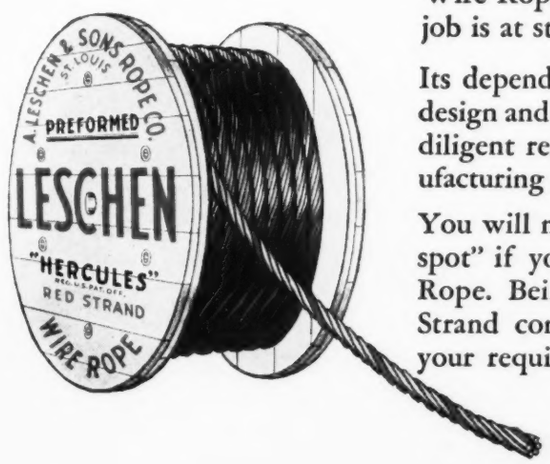
"The Borg-Warner Line"

Write for Catalog and Prices
INGERSOLL STEEL DIVISION
BORG-WARNER CORPORATION
New Castle, Indiana
Plants: New Castle, Ind.; Chicago, Ill.; Kalamazoo, Mich.

In a Tight Spot!

In industry, as in baseball, dependable performance is what counts . . . that's why "HERCULES" (Red Strand) Wire Rope is so often called into play when a crucial job is at stake.



Its dependability is not a matter of chance, since its design and construction is the result of careful planning, diligent research, long experience and advanced manufacturing facilities.

You will never go wrong . . . no matter how "tight the spot" if you select "HERCULES" (Red Strand) Wire Rope. Being made in Round Strand and Flattened Strand construction – Preformed or Non-preformed, your requirements can always be filled – *satisfactorily!*

Your inquiries are welcome
. . . and we invite them.

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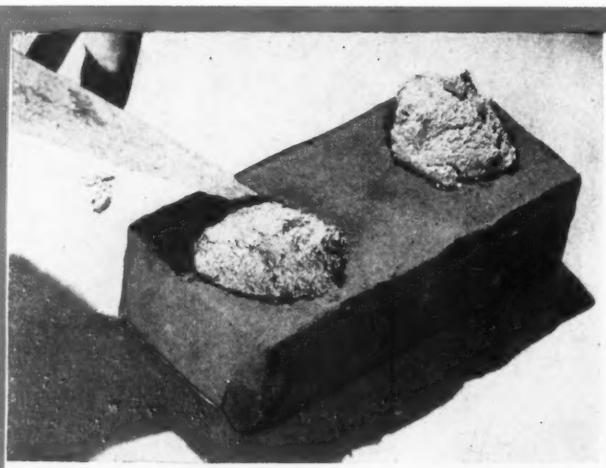
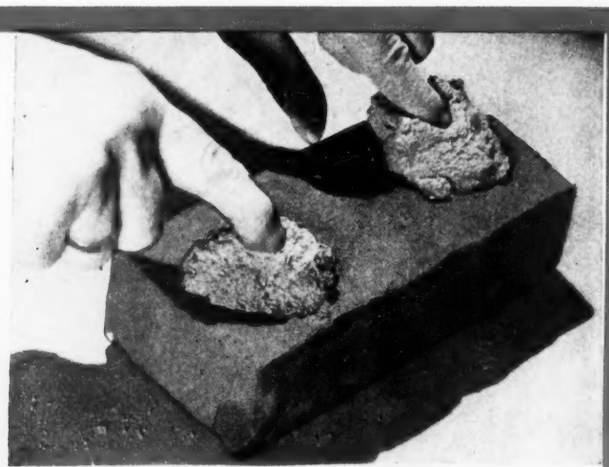
BRIXMENT MORTAR

Has Better Water-Retention



Here's the way to test for high water-retention. Slap a small dab of any two mortars onto a brick. Wait a minute, then feel each dab. The one that stays plastic longest will be the one *having the* highest water-retention. *Try this with Brixment mortar!*



—AND HIGH WATER-RETENTION IS ESSENTIAL TO WELL-BONDED, WATERTIGHT MASONRY

Water-retaining capacity is the ability of a mortar to retain its moisture, and hence its plasticity, when spread out on porous brick. ● High water-retaining capacity is of *extreme importance* in mortar. If the mortar does not have high water-retaining capacity, it is too quickly sucked dry by the brick; the mortar stiffens too soon, the brick cannot be properly bedded, and a good bond cannot be obtained.

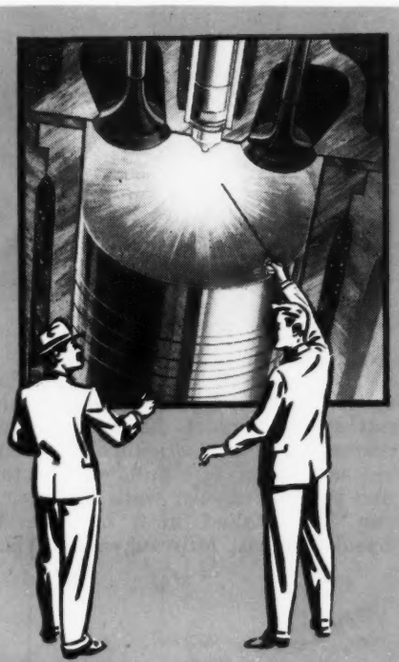
Brixment mortar has extremely high water-retaining capacity. It strongly resists the sucking action of the brick. Brixment mortar therefore stays smooth and plastic longer, when spread out on the wall. *This permits a more thorough bedding of the brick, and a more complete contact between the brick and the mortar.* The result is a better bond, and hence a stronger and more *water-tight wall.*

LOUISVILLE CEMENT CO., Incorporated, LOUISVILLE 2, KENTUCKY

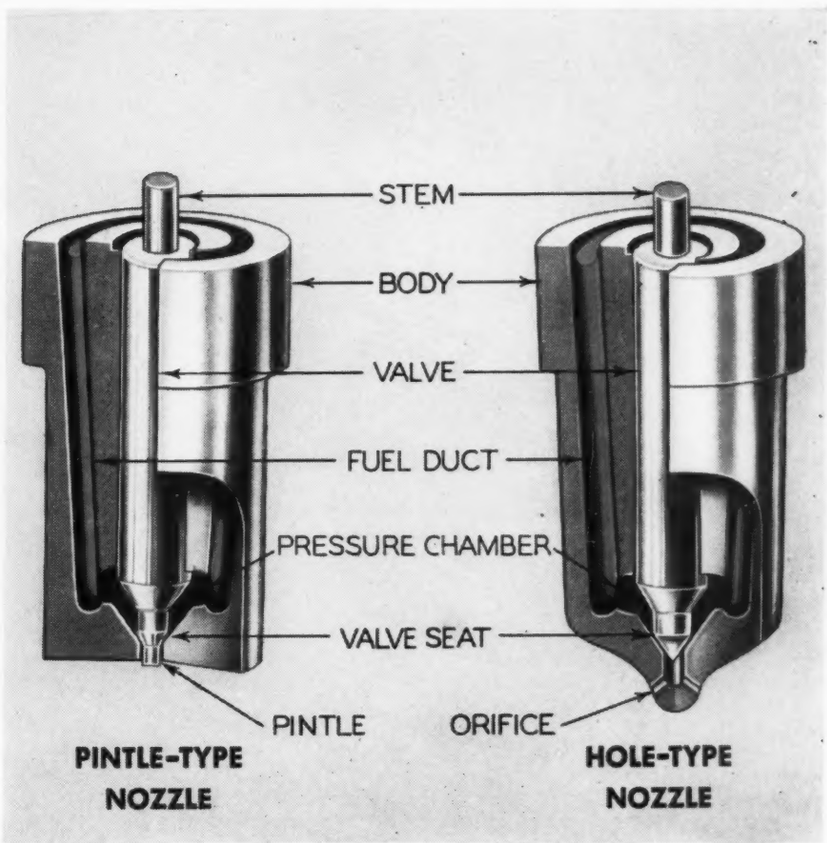
CEMENT MANUFACTURERS SINCE 1830

GOOD FUEL INJECTION

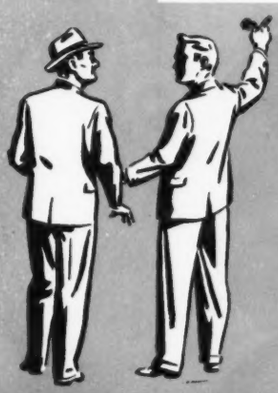
Requires a Tailored Spray

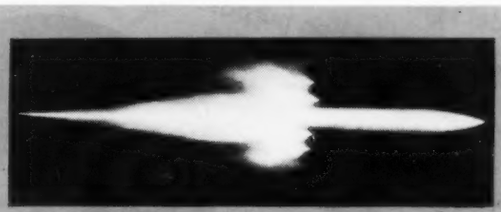


THE MAIN FUNCTION of an injection system is to deliver fuel to the engine cylinders in such a manner that it will burn efficiently. That's why the injection nozzle is so important. It must produce a spray that meets exactly the combustion-chamber requirements.



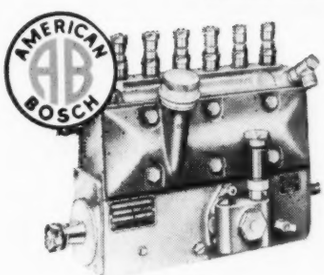
Tailoring is the art of producing the precise spray characteristic which the engine likes best. Tailoring know-how comes from long experience in correlating the selection of every part of the injection system for the single purpose of providing the engine with the ideal spray pattern.





THE CORRECT PATTERN PAYS ITS WAY. American Bosch Injection Equipment provides tailored fuel sprays to fit your Diesel's combustion chamber. That means fuel economy, power to suit the task at hand, and satisfactory performance under all operating conditions.

WRITE FOR A COMPLETE DIRECTORY OF AMERICAN BOSCH AUTHORIZED SERVICE STATIONS



AMERICAN BOSCH CORPORATION, SPRINGFIELD 7, MASS.

AMERICAN BOSCH

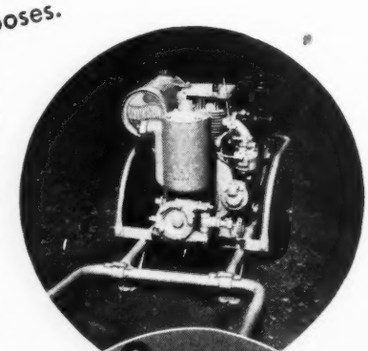
Diesel Fuel Injection

The JACKSON Hydraulic CONCRETE VIBRATOR

for those 24 HOUR DAYS OF CONTINUOUS SERVICE

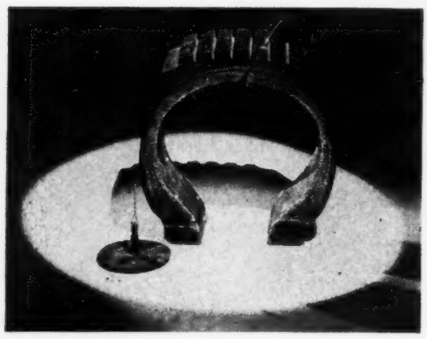
Thoroughly proved the most dependable and efficient vibrator in its class on practically every major wartime project. Now newly streamlined for even greater convenience and efficiency, the JACKSON Model HS-A1 is by long odds the best buy for general, all-around concrete construction purposes.

Vibrator head driven by hydraulic motor. Standard head 2¾" x 21". Vibratory frequency instantly adjustable from 3000 to 7000 V.P.M. All moving parts submerged in oil. Rugged, neoprene lined hose 34 feet long. Husky Wisconsin engine. Wheelbarrow mounting balanced for light lift, with drop handles for easy hose manipulation. Grinding and drilling attachments available. See it at your JACKSON distributor or write for further details. Other JACKSON models to ideally suit every concrete vibratory requirement.



ELECTRIC TAMPER & EQUIPMENT CO.
LUDINGTON MICHIGAN

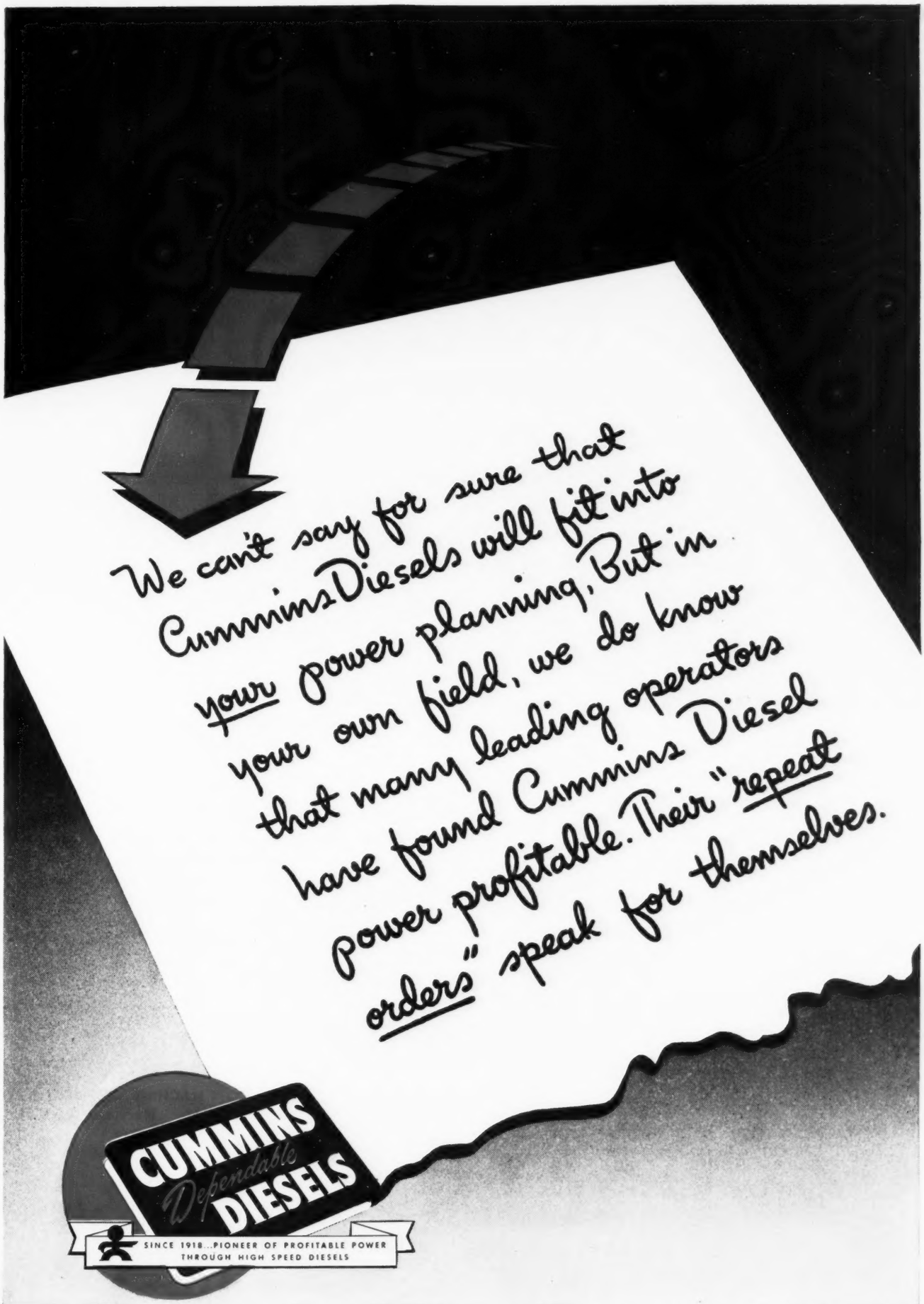
BLOWOUT-PROOF RUBBER RIVET permanently seals small breaks and nail or spike holes in tires to prevent water and slush seepage. Made in three sizes, it consists of circular rubber base and rubber stem with spiraled steel needle that goes



through openings as small as pin holes. Rubber cement applied to stem and casing hole serves as lubricant. Quick, hard pull on pliers thins out stem to exact diameter of hole and enables it to slip through. Stem, released when wire pulls off, shortens and spreads against walls of hole. It can be installed in 3 min.—**J. W. Speaker Corp., Milwaukee 12, Wis.**

TWO-MOTOR CRANE is designed to permit immediate transfer of traveling and steering functions from chauffeur's cab to crane operator's cab. Rubber-mounted crane is operated by driver at truck speed when traveling overland or through congested areas. Upon arrival at job,

where crane operator requires full control over his machine, truck functions are taken over by him through "Tu-Control" mechanism. Hand and other signals are unnecessary. On job truck is moved forward and back and turned by crane operator. Precise control over truck in relation to boom is assured.—**Browning Crane & Shovel Co., E. 163rd & Waterloo Road, Cleveland 10, Ohio**



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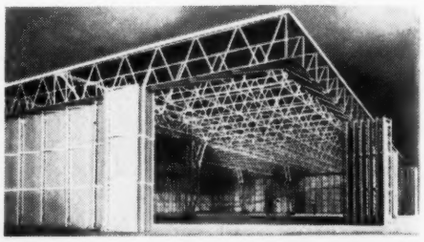
METAL TUBES AND REMOVABLE WALLS are used in erection of airplane hangar without riveting, hand-



welding or other skilled operations. This method of shop-fabricated construction (used in pictured 8x5-ft. model airplane hangar) is adaptable to hangars, warehouses, repair shops, railroad stations and similar structures.—**Atlas Aircraft Products Corp., 405 E. 42nd St., New York, N. Y.**

WIRING REPAIR KIT is now available for making quick, vibration-resistant connections without solder. It is particularly useful for repair of traffic signals, trucks, road machinery and other construction applications. Kit contains all-purpose, precision installation tool which cuts and strips wire.—**Aircraft-Marine Products, Inc., 1599 N. 4th St., Harrisburg, Pa.**

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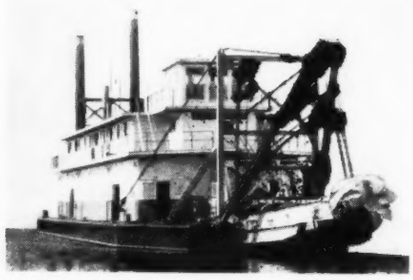
Baltimore 30, Maryland, U. S. A.



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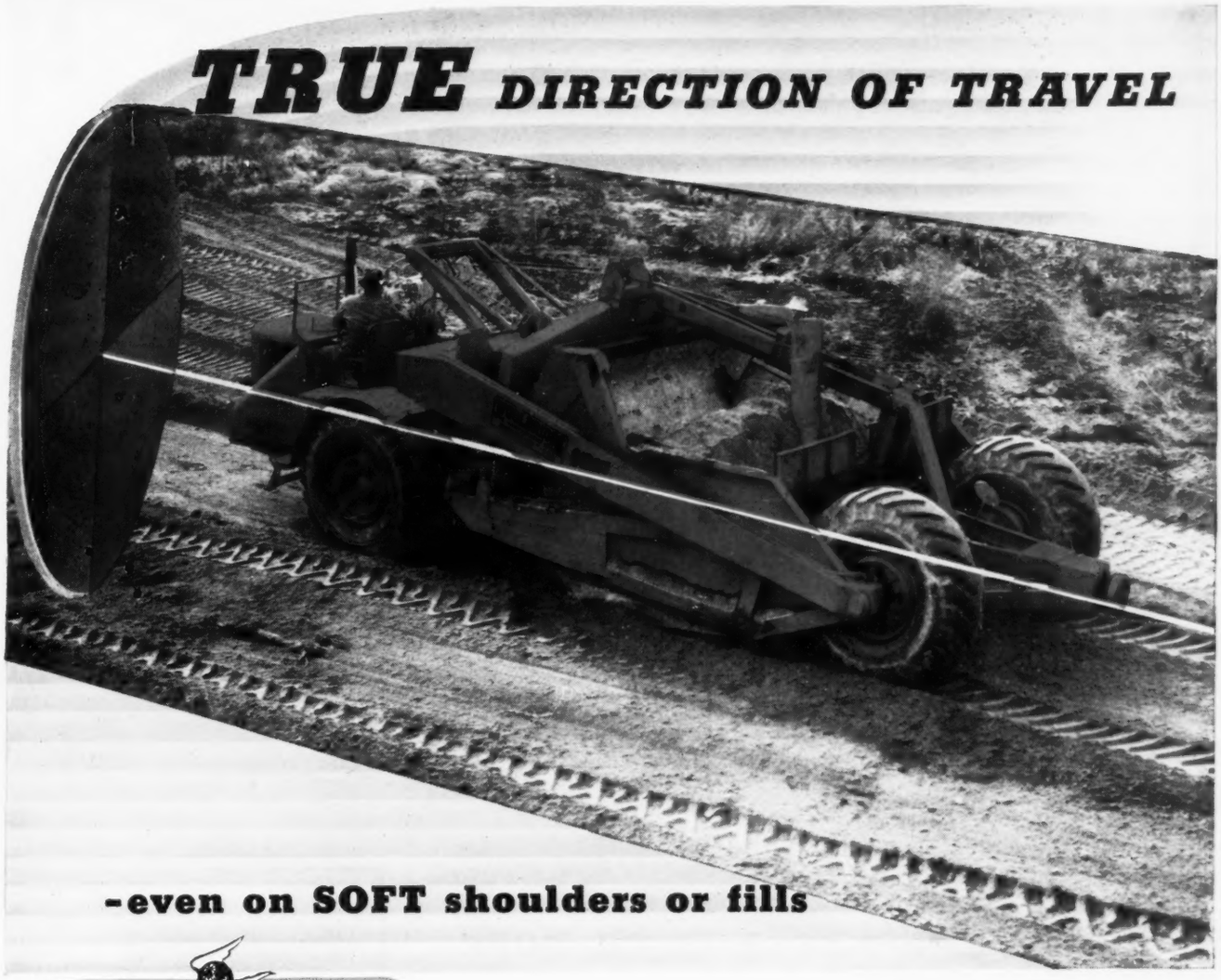

-even on SOFT shoulders or fills

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EARTHMOVING EQUIPMENT
Includes

★ **SCRAPERS**
Tractor-drawn for handling heaping yardages from 6 to 28 cu. yards.

★ **POWER CONTROL UNITS**
Single and multiple drum with universal or roller fairleads.

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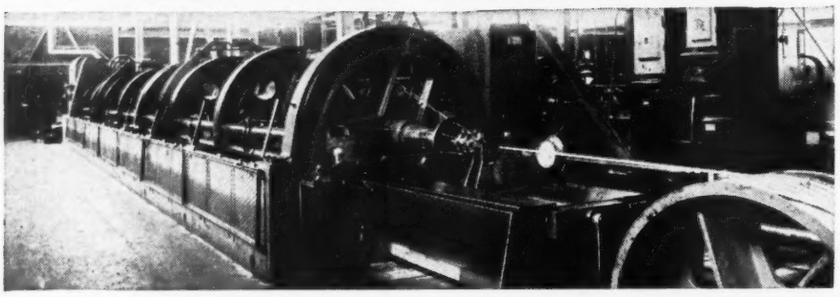
TERRA COBRA
Hi-Speed Self-Propelled EARTHMOVERS

FROM THE MAKING OF THE STEEL—

THROUGH PROCESSING THE WIRE—

TO FABRICATING THE WIRE ROPE—



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is safeguarded by continued, careful control to assure the utmost in performance, safety and long life. Wickwire Spencer Wire Rope is available in all sizes and constructions—both regular lay and WISSCOLAY *Pre*formed.

HOW TO PROLONG ROPE LIFE AND LESSEN ROPE COSTS . . .

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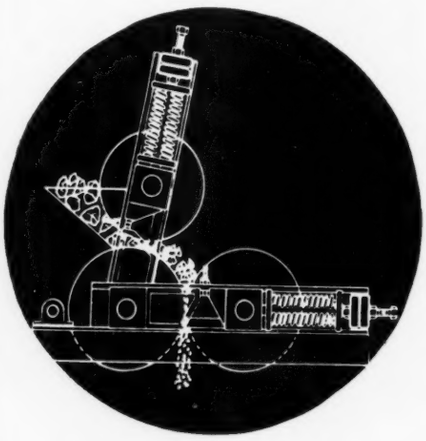

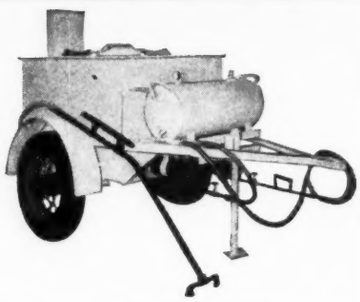

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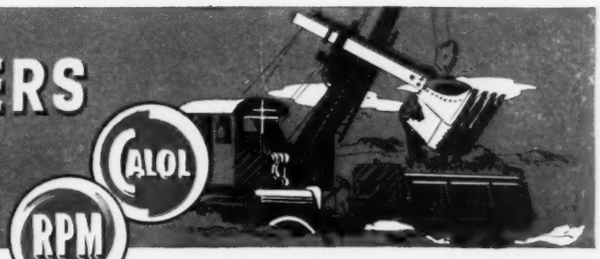
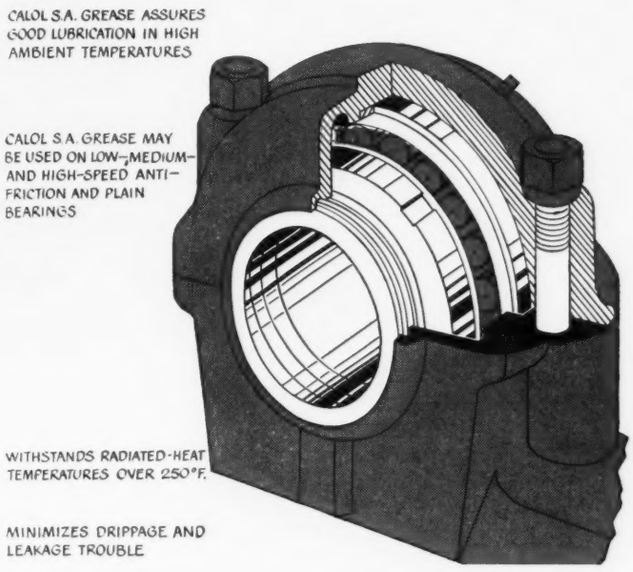
ELKHART INDIANA

STANDARD ENGINEERS NOTEBOOK




CALOL S.A. GREASE ASSURES GOOD LUBRICATION IN HIGH AMBIENT TEMPERATURES
CALOL S.A. GREASE MAY BE USED ON LOW-, MEDIUM- AND HIGH-SPEED ANTI-FRICTION AND PLAIN BEARINGS
WITHSTANDS RADIATED-HEAT TEMPERATURES OVER 250°F.
MINIMIZES DRIPPAGE AND LEAKAGE TROUBLE

New grease lubricates in extra hot conditions

Developed especially for bearings that must operate in radiated heat, new Calol S. A. (sodium aluminum) Grease has proved satisfactory in temperatures over 250° F. It has been tested by many operators on working machines in the field. In addition, it was given a series of tests in the Navy Ball Bearing Machine, operated at 10,000 rpm, with bearing temperatures maintained at a high degree.

Calol S. A. Grease is made from a special type base and selected oils that give it high heat-resistant qualities. In use, these qualities assure minimum drippage or leakage from bearings.

Although Calol S. A. Grease is ideal in a multiplicity of services, it is specifically adapted to the lubrication of low, medium and high speed anti-friction bearings used in all types of machines.

Made in three grades, 00, 0, and 1, by Standard of California, Calol S. A. Grease is available in 35-, 108- and 420-pound containers.

Tacky oils cut gear lubrication costs

Where bearings and gears must carry an extreme pressure load for a relatively long time because of slow operation, Calol Vistac Oils are recommended.

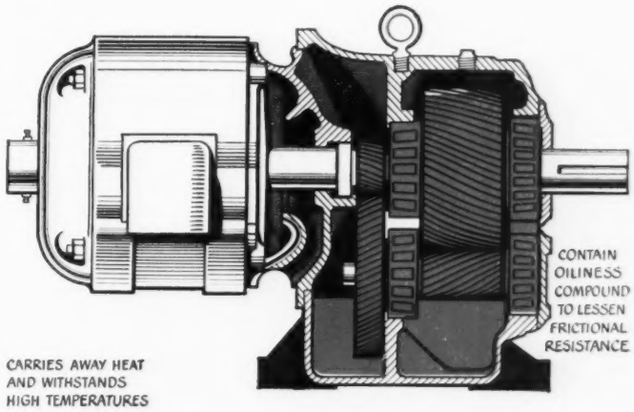
They are viscous and tacky, and have unusual ability to remain on bearing surfaces and resist film breakdown. Thus, a smaller quantity is required and many gear sets can be lubricated less expensively with Calol Vistac Oils than with ordinary oils.

A special oiliness ingredient in Calol Vistac Oils gives them low operating torque, thus minimizing frictional resistance while the extreme pressure additives used insures efficient operation under extremely heavy loads. They withstand high operating temperatures and readily carry away heat.

There are six grades of Calol Vistac Oils, providing the correct lubricant for all types of heavy-duty industrial reduction gear sets. Also excellent for the lubrication of air tools, they atomize quickly, are stable and minimize vapor trouble.

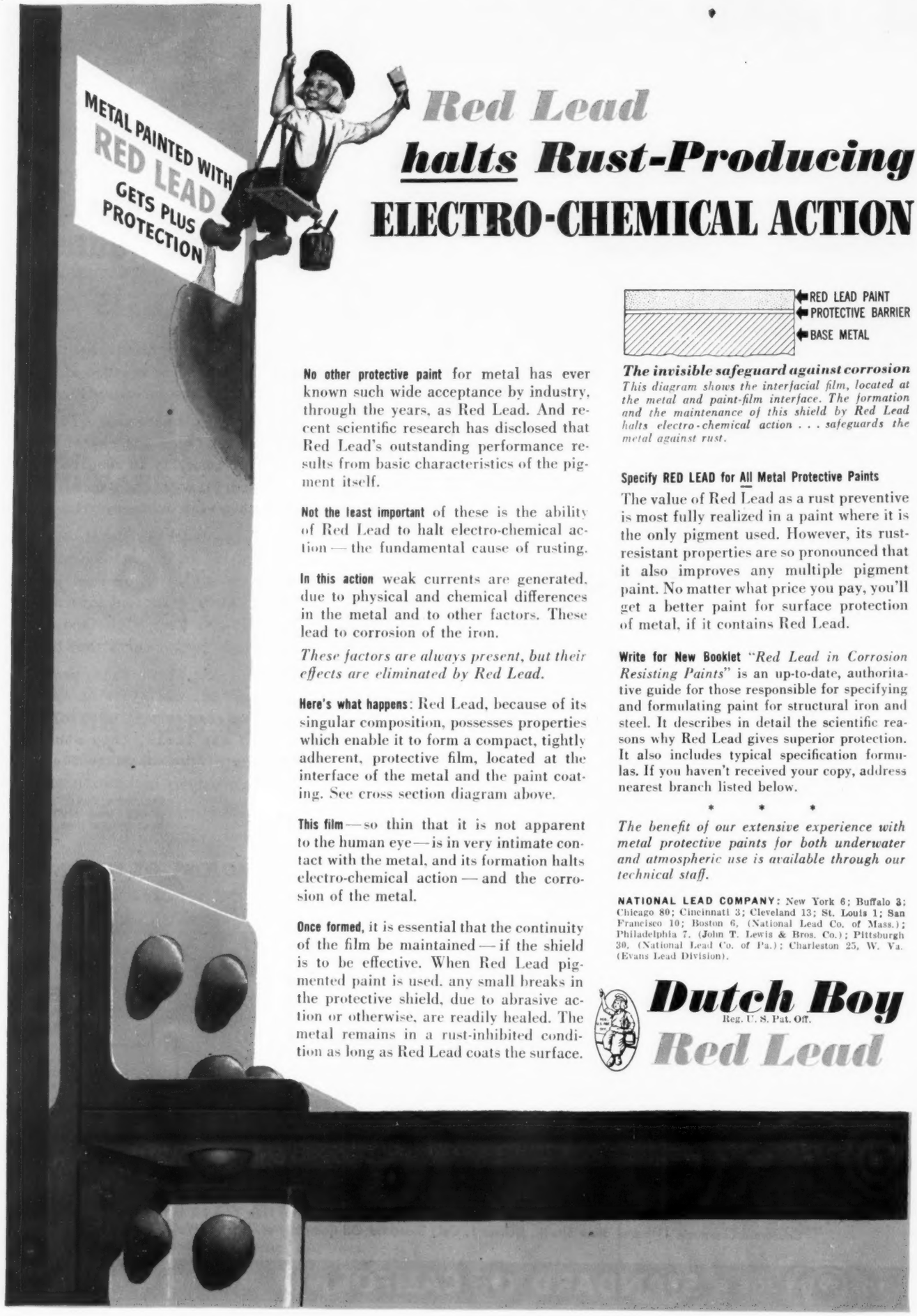
CALOL VISTAC OILS ARE VISCOUS AND TACKY AND REMAIN ON BEARING SURFACES

CALOL VISTAC OILS COME IN SIX GRADES. A SMALL QUANTITY MAINTAINS EFFICIENT LUBRICANT FILM



For additional information and the name of your nearest Distributor, write Standard of California, 225 Bush Street, San Francisco 20, Calif.; The California Oil Company, 30 Rockefeller Plaza, New York 20, N. Y.; The California Company, 17th and Stout Streets, Denver 1, Col.; Standard Oil Company of Texas, El Paso, Texas.

FOR EVERY JOB A STANDARD OF CALIFORNIA TEST-PROVED PRODUCT



Red Lead *halts* Rust-Producing ELECTRO-CHEMICAL ACTION

The invisible safeguard against corrosion
This diagram shows the interfacial film, located at the metal and paint-film interface. The formation and the maintenance of this shield by Red Lead halts electro-chemical action . . . safeguards the metal against rust.

No other protective paint for metal has ever known such wide acceptance by industry, through the years, as Red Lead. And recent scientific research has disclosed that Red Lead's outstanding performance results from basic characteristics of the pigment itself.

Not the least important of these is the ability of Red Lead to halt electro-chemical action — the fundamental cause of rusting.

In this action weak currents are generated, due to physical and chemical differences in the metal and to other factors. These lead to corrosion of the iron.

These factors are always present, but their effects are eliminated by Red Lead.

Here's what happens: Red Lead, because of its singular composition, possesses properties which enable it to form a compact, tightly adherent, protective film, located at the interface of the metal and the paint coating. See cross section diagram above.

This film — so thin that it is not apparent to the human eye — is in very intimate contact with the metal, and its formation halts electro-chemical action — and the corrosion of the metal.

Once formed, it is essential that the continuity of the film be maintained — if the shield is to be effective. When Red Lead pigmented paint is used, any small breaks in the protective shield, due to abrasive action or otherwise, are readily healed. The metal remains in a rust-inhibited condition as long as Red Lead coats the surface.

Specify RED LEAD for All Metal Protective Paints

The value of Red Lead as a rust preventive is most fully realized in a paint where it is the only pigment used. However, its rust-resistant properties are so pronounced that it also improves any multiple pigment paint. No matter what price you pay, you'll get a better paint for surface protection of metal, if it contains Red Lead.

Write for New Booklet "*Red Lead in Corrosion Resisting Paints*" is an up-to-date, authoritative guide for those responsible for specifying and formulating paint for structural iron and steel. It describes in detail the scientific reasons why Red Lead gives superior protection. It also includes typical specification formulas. If you haven't received your copy, address nearest branch listed below.

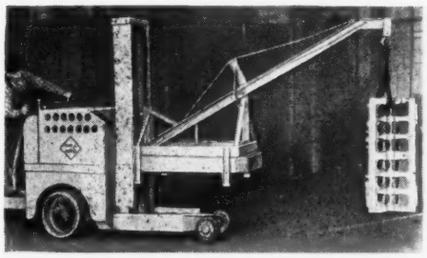
* * *

The benefit of our extensive experience with metal protective paints for both underwater and atmospheric use is available through our technical staff.

NATIONAL LEAD COMPANY: New York 6; Buffalo 3; Chicago 80; Cincinnati 3; Cleveland 13; St. Louis 1; San Francisco 10; Boston 6, (National Lead Co. of Mass.); Philadelphia 7, (John T. Lewis & Bros. Co.); Pittsburgh 30, (National Lead Co. of Pa.); Charleston 25, W. Va. (Evans Lead Division).

Dutch Boy
Reg. U. S. Pat. Off.
Red Lead

BOOM ATTACHMENT permits use of high-lift-platform truck for transportation of castings and parts for machine tools of size or shape not readily handled on skids or in skid boxes. Platform trucks are adapted to these loads by detachable boom built from steel angles and rods. Truck's platform is driven under-



neath device and latch bar on attachment is engaged with cross-member of truck's elevating mechanism, which holds it firmly while load is being lifted and transported. Attachment can be applied or removed in few minutes. Improvised boom is said to save many times its cost in time and manpower. Also available is detachable boom for use with company's trucks, which has separate motor for elevating and lowering load by cable. **—Elwell-Parker Co., Cleveland, Ohio.**

National
Carbide
FLOODLIGHTS

FOR ALL PURPOSES FOR WHICH FLOOD-LIGHTS ARE REQUIRED

Economical in Cost
Dependable in Operation

Available in 1500, 8,000 and 16,000 Simple in Construction candlepower units.

National Carbide N-200 Light illustrated. Write for literature showing entire line of Floodlights and Lanterns

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60 East 42nd St.
New York 17, N. Y.

Nitro Starch Base

HIGH EXPLOSIVE EFFICIENCY

IN MINING · QUARRYING · LOGGING · CONSTRUCTION

Plus THREE ADVANTAGES FOR YOU!

1 WILL NOT PRODUCE HEADACHES from handling . . . reduces discomfort from breathing muck pile fumes. Better working conditions for you and your men!

2 WILL NOT FREEZE or leak at Arctic or Tropic temperatures. Maintained high efficiency . . . anywhere . . . anytime!

3 WITHSTANDS IMPACT in high-powered Rifle Bullet Test. Greater safety for workers!

EXPLOSIVES 1905 TROJAN 1945 CHEMICALS

• Increased efficiency during and after all blasting operations; greater safety and comfort for your workers—that's what Trojan's three advantages will do for you. Throughout the World, under all kinds of climatic conditions, Trojan Explosives perform with uniform superiority.

TROJAN POWDER COMPANY

One of America's Oldest High Explosives Manufacturers

PLANTS: SEIPLE, PA. • ROBERT, CAL. • MAGAZINES STRATEGICALLY LOCATED THROUGHOUT THE NATION

OFFICES: ALLENTOWN, PA. • SAN FRANCISCO, CAL. • LOS ANGELES, CAL. • PORTLAND, ORE. • NEW YORK, N. Y.

200 PARSONS WHEEL TRENCHLINER

DIRECT, SIMPLE POWER FLOW

Power goes to work fast on the Parsons 200 Trenchliner, flows in a direct line, without detours. You get maximum production per hour, because more power is delivered to the wheel.

ENCLOSED GEARS

All the gears that activate the operation of the Parsons 200 Trenchliner require lubrication only once a season because they are enclosed in oil-tight gear cases. Gears are cut from the solid; alloy steel shafts are mounted in anti-friction bearings.

PIVOTAL WHEEL MOUNTING

New pivotal wheel mounting, exclusive on the Parsons 200 Trenchliner, eliminates dirt catching slide tracks, simplifies fine grading in pipeline and drainage operations. Wheel drive chains stay tight in any wheel position.

2-POINT WHEEL BOTTOM SUPPORT

Wheel is supported at four points, but most firmly on the bottom where digging pressure is greatest. Two double-wheeled adjustable dollies are spaced close together to prevent frame distortion.

PARSONS COMPANY

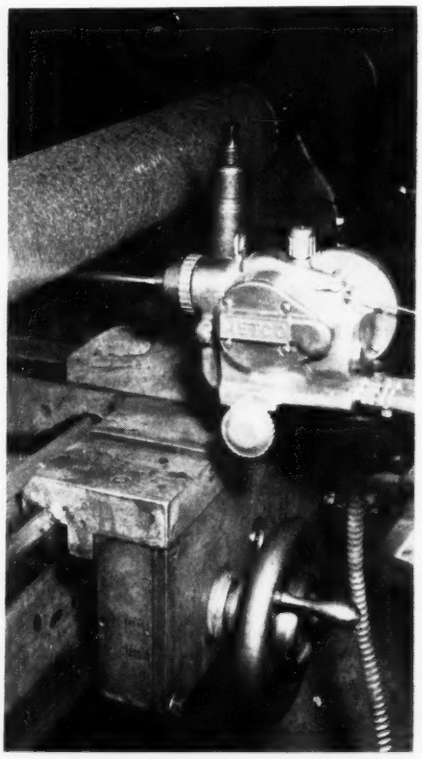
KOEHRING SUBSIDIARY **NEWTON, IOWA**

TRENCHING EQUIPMENT PARSONS

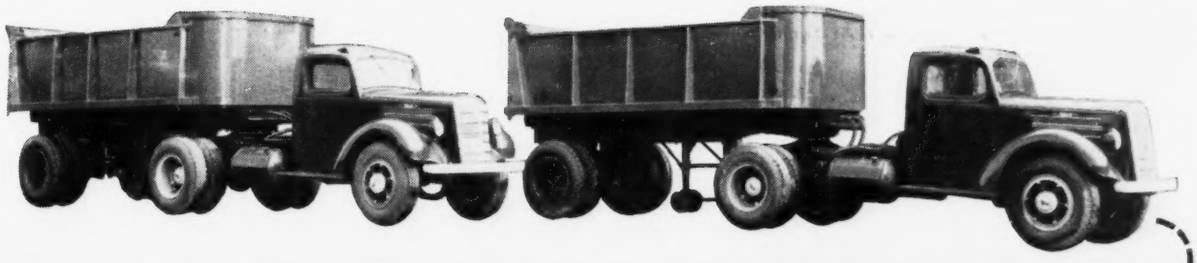
CLEARING DOZER has extra heavy moldboard blade equipped with adjustable teeth. Maker claims it saves valuable top soil, eliminates spottiness and leaves ground

ready for disking. Blade is interchangeable with regular dirt blade of cable or hydraulically operated trac-dozer. It is used for clearing farm land, rights of way, logged-off land and airports.—**Isaacson Iron Works, Seattle, Wash.**

METALLIZING GUN, Type Y, is claimed to be answer to increasing demand for metal spraying unit that can be used for production and other heavy-duty jobs instead of for those requiring only intermittent operation. General construction, performance and other features are geared for mounted, mechanical operation rather than for hand use. Gears, worms and bearings, several times larger than any used previ-



ously, virtually eliminate wear and replacement. This feature, coupled with lower operating and maintenance costs, is claimed to effect considerable saving. Fluid lubrication and built-in force-feed pump assures adequate supply of lubricant to all bearings regardless of operating position. Gun is non-sensitive to gas and oxygen pressure variations as much as 10 lb., either while lighting or spraying.—**Metallizing Engineering Co., Inc., 38-14 30th St., Long Island City 1, N. Y.**



HEADED FOR *The Blue Grass Country*

THESE two Hercules semi-trailer dump units — and a dozen more exactly like them — are the latest additions to the fleet operated by the R. B. Tyler Company of Louisville, Kentucky. Like all Hercules trailer units, these are completely integrated—trailer chassis, hoist and body—and designed to meet specific hauling and dumping requirements.

Recently put into service handling stone, gravel and sand on a 20-mile haul, these Hercules Huskies have already established new records for economy of operation. Hercules Huskies, tailored to your particular job, can provide the dependable, low-cost service you're looking for . . . . service that means profitable hauling and dumping. Bulletin HD-201 tells how and why . . . write today for your free copy. Address request to Department B.

View of 14-ton capacity trailer dump unit, equipped with exclusive Hercules "Center-Lift" hoist. Note special lightweight aeroplane type struts in underbody structure, designed for maximum rigidity and stability.

HERCULES STEEL PRODUCTS COMPANY . . . GALION, OHIO

when the call is

"LOOK OUT BELOW!"

M·S·A SKULLGARDS

GUARD HEADS on-the-job!

The danger of falling objects from overhead is frequent in the construction industries—minor blows and bumps are ever-present hazards. The man who wears his M.S.A. Skullgard throughout each working shift enjoys the best assurance of head protection—the greatest comfort and wearing ease during every working minute! High pressure molded, laminated bakelite gives these hats their extraordinary strength—flexible sweatbands and shock absorbing inner head cradle assure easy fit and increased safety. Specify these sturdy, non-deteriorating, truly all-weather work hats—they're sound insurance on any job!

MINE SAFETY APPLIANCES COMPANY

Braddock, Thomas and Meade Streets · Pittsburgh 8, Pa.

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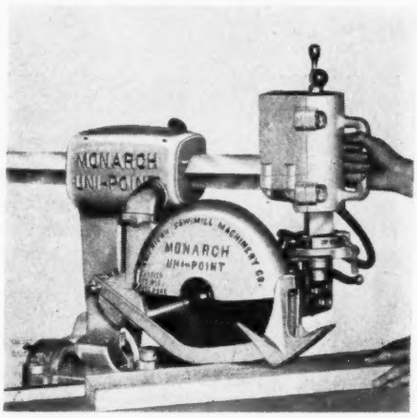
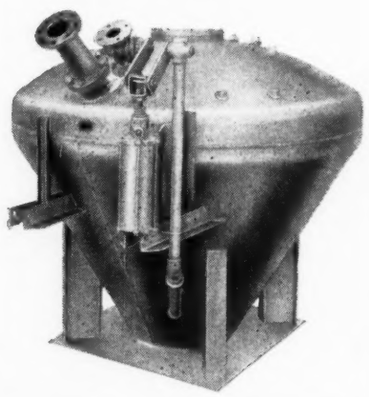
TORONTO . . . MONTREAL . . . VANCOUVER . . . CALGARY . . . NEW GLASGOW, N. S.

PORTABLE 12-IN. RADIAL SAW is made of light, non-rusting manganese. Unit complete with carrying frame and 1½-hp. electric motor weighs approximately 200 lb. It has 3x16-in. crosscut and 20½-in. wide ripping capacity. Features one-point



cutting and heat-treated, hardened-steel safety arm which glides forward and back on wide ballbearing self-aligning rollers. Another safety feature is specially designed saw guard with telescoping undercarriage that keeps all teeth covered all the time.—**American Saw Mill Machinery Co., Hackettstown, N. J.**

Move Cement by Air-floating It!



The ROBINSON AIR-ACTIVATED CONVEYOR SYSTEM is practical and efficient, saving in air and maintenance. It has been used on numerous big construction jobs as well as in process plants.

You can order the entire system installed including compressor, piping, storage tanks, etc. or just the activator, such as illustrated, to be used with your own accessory equipment.

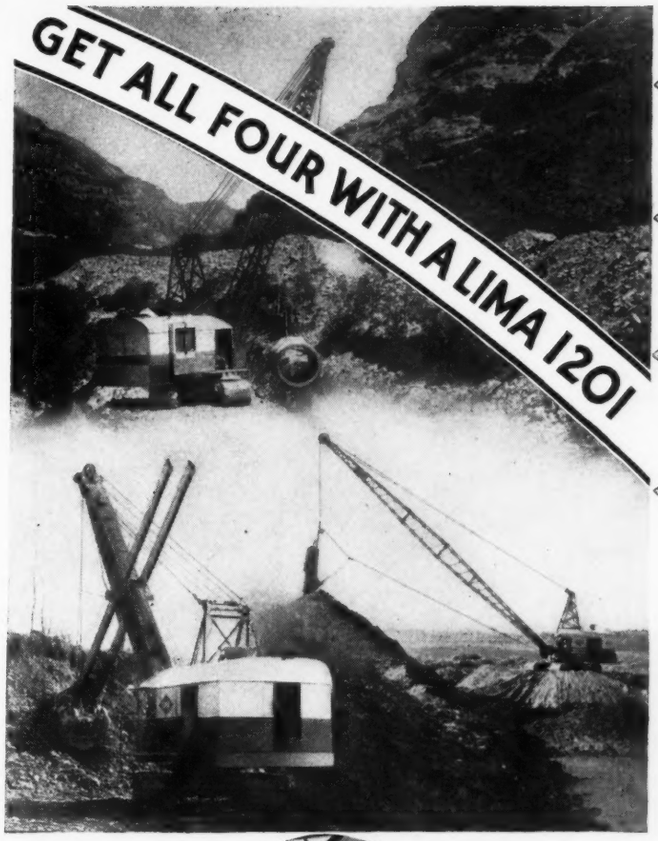
Write for illustrated Bulletin No. 310

ROBINSON AIR-ACTIVATED CONVEYOR SYSTEMS

Division of MORSE BOULGER DESTRUCTOR CO.

211-C EAST 42nd STREET, NEW YORK 17, N.Y.

Representatives in all Principal Cities



1 ANTI-FRICTION BEARINGS THROUGHOUT

2 HOIST, SWING TRAVEL and BOOM UP OR DOWN AT THE SAME TIME

3 BIG WIDE DRUMS . . .

4 "PRECISION" AIR CONTROL . .

The more precise the MACHINE the better the PERFORMANCE

EASY TO OPERATE

LESS FATIGUE

The LIMA Type 1201 is designed, engineered and built for heavy duty construction—for the job that demands more than the ordinary. As a standard shovel it is equipped with a 3½ cubic yard dipper, 32′ 6″ boom and 22′ 0″ dipper handle. For high lift work a 42′ 0′ boom, 32′ 0″ dipper handle and 2½ cubic yard dipper can be furnished. As a crane it has a lifting capacity of 65 tons. Dragline capacities vary, depending upon the nature of the work. Whatever the job, whether it be tough rock digging, working as a dragline, in wet swampy ground or crane work where heavy lifts must be made with utmost precision, you'll find that the LIMA Type 1201 will fit into your plans exactly. Every day, more and more users of excavating machinery are turning to LIMA for the most in excavator design.

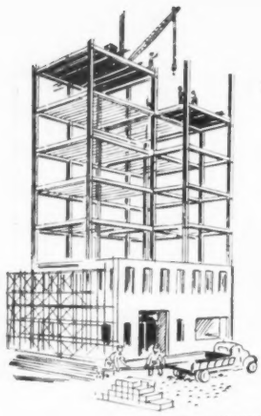
LIMA LOCOMOTIVE WORKS, INCORPORATED

Shovel and Crane Division - - LIMA, OHIO, U.S.A.

NEW YORK, N. Y. ST. LOUIS, MO. DALLAS, TEXAS
NEWARK, N. J. MINNEAPOLIS, MINN. MEMPHIS, TENN.
LOS ANGELES, CALIF. SAN FRANCISCO, CALIF. PORTLAND, ORE ON
SEATTLE, WASH. SPOKANE, WASH.

LIMA

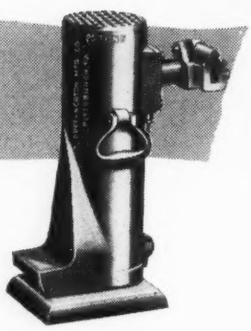
SHOVELS ¾ YARD TO 5 YARDS DRAGLINES — VARIABLE CRANES 13 TONS TO 100 TONS



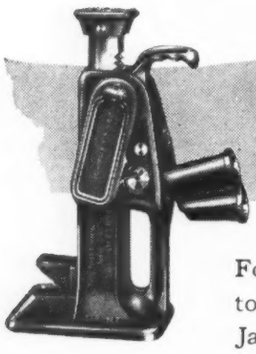
. . for every construction job

DUFF-NORTON JACKS

HEAVY DUTY SCREW JACKS
15 to 100 TONS



For that heavy lifting and lowering, Duff-Norton Heavy Duty Screw Jacks provide the easy-operating "mechanical muscles."



AUTOMATIC LOWERING JACKS
5 to 25 TONS

For speedy operation on loads up to 25 tons, Duff-Norton Automatic Lowering Jacks are safe, dependable and economical.

TRENCH BRACES

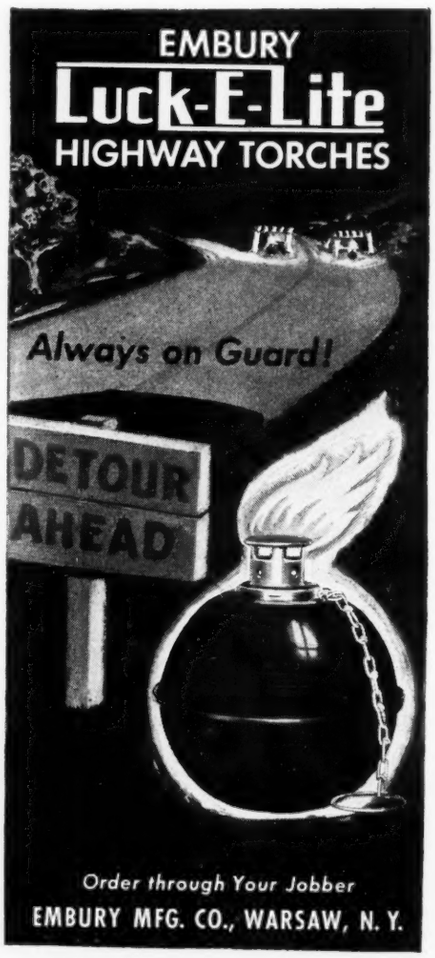
You speed up shoring and prevent cave-ins when you use Duff-Norton Trench Braces and Fittings on your trenching.

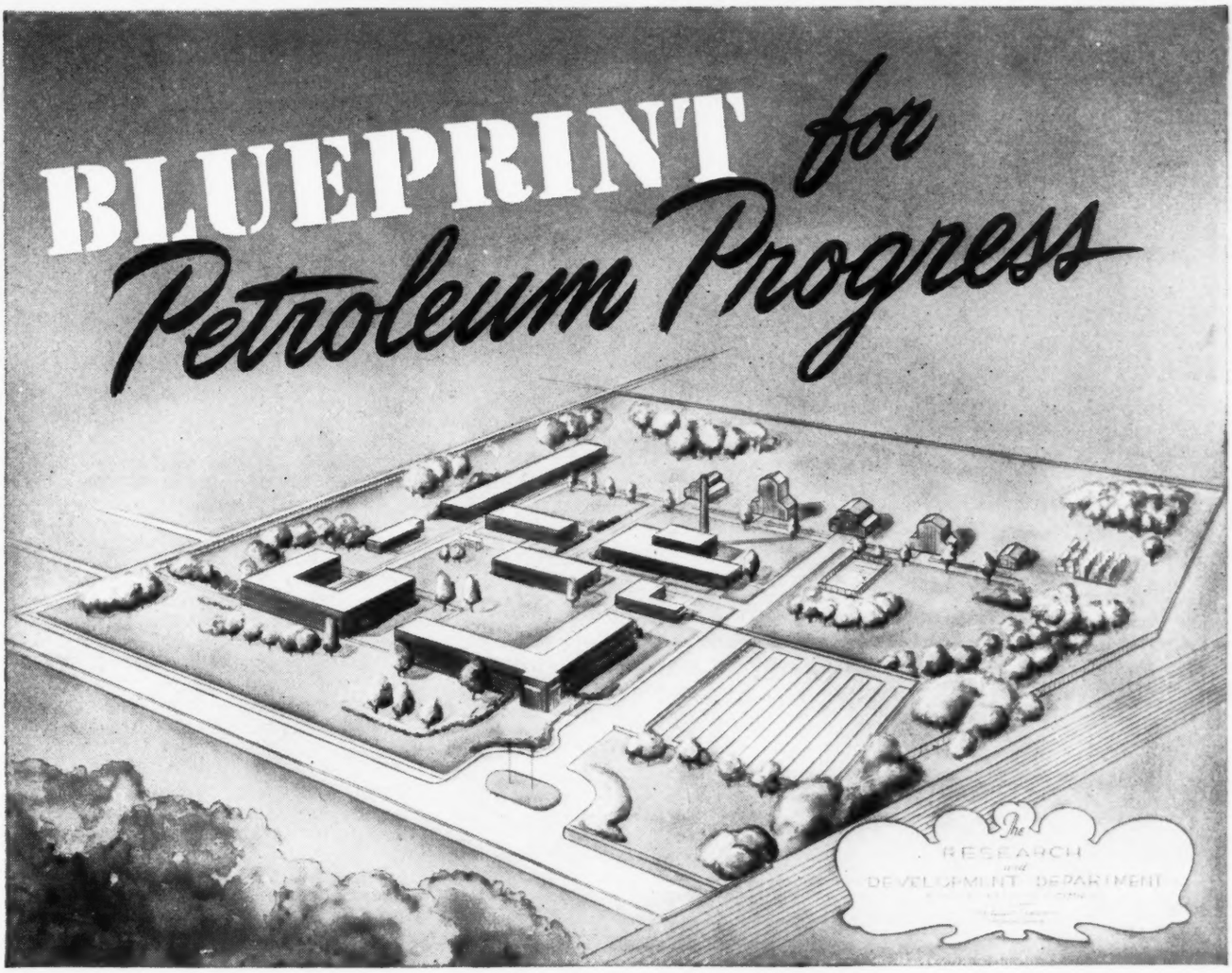
WRITE for descriptive bulletins on Duff-Norton Jacks for construction work!

THE DUFF-NORTON MANUFACTURING COMPANY
P. O. BOX 1889, PITTSBURGH 30, PA.
RATCHET JACKS, SCREW JACKS, AIR POWER AND HYDRAULIC JACKS
SEE YOUR A.E.D. DISTRIBUTOR

CAPSTAN-TYPE CAR PULLER for handling railroad cars without waiting for switch engine is small, compact, self-contained unit with all gearing and motor completely inclosed. Capstan head at convenient height for operator. Rope can lead in any direction and there are no protruding parts to follow

rope. Outstanding feature: greater efficiency with less horsepower, thereby reducing cost of operation. Simple to operate—rope is wrapped around capstan head a few times, button is pushed on conveniently located control panel, and car moves with practically no effort on part of operator. Required capacity determined by total starting pull and total running pull.—**Clyde Iron Works, Inc., Duluth 1, Minn.**





MOVING ahead with the resumption of peace-time industrial activity, Sinclair assures its customers of still greater product quality and performance with construction of an elaborate new research center at Harvey, Illinois.

In this great petroleum laboratory, recognized technological experts will have at their disposal the very latest facilities for the solution of the most difficult and specific lubrication problems. From the research work here, you may expect consistently top performance from Sinclair lubricants developed for every type of industrial use.

This research center is evidence that Sinclair means it when it says "Better Products . . . Better Service."

SINCLAIR LUBRICANTS-FUELS

FOR FULL INFORMATION OR LUBRICATION COUNSEL WRITE SINCLAIR REFINING COMPANY, 630 FIFTH AVENUE, NEW YORK 20, N. Y.

CLEVELANDS

Always "Tops" in Trenching Machine Progress

Cleveland pioneered nearly a quarter century ago, the compact full-crawler mounted digging wheel. Cleveland's continued alertness to customers' requirements plus an aggressive open-minded engineering has contributed such other "firsts" as — transmission controlled speed changes and speed combinations, equalized drive to the digging wheel through enclosed differential, trailer mobility and unit-type construction minimizing repair time. THIS IS YOUR GUARANTEE THAT WITH CLEVELANDS ON YOUR JOBS YOU WILL GET "MORE TRENCH IN MORE PLACES AT LESS COST."

THE CLEVELAND TRENCHER CO.
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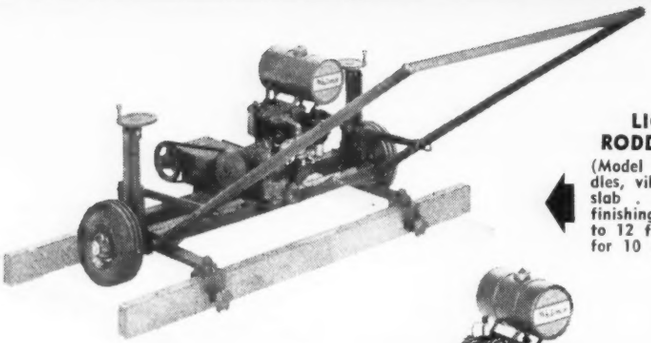
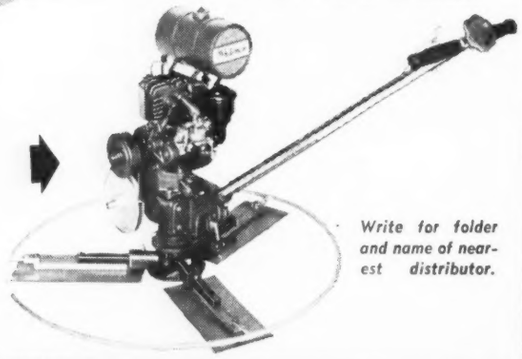
Machine Economy and Perfection for SMALL CONCRETE JOBS



LIGHTWEIGHT RODDING MACHINE
(Model "RS") screeds, puddles, vibrates and levels the slab . . . prepares it for finishing. For slab widths 3 to 12 ft. Also in Model 44 for 10 to 20 ft. widths.

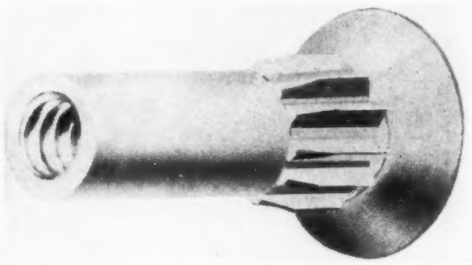


LIGHTWEIGHT FLOATING-FINISHING MACHINE
(Model "J")
For level finishing . . . for either traction or smooth surfaces. Only 105 lbs., 35" diameter. Also in Model "B", 46" diameter.

Write for folder and name of nearest distributor.

Whiteman CONCRETE EQUIPMENT
WHITEMAN MFG. CO.
3249 Casitas Ave., Los Angeles 26, California

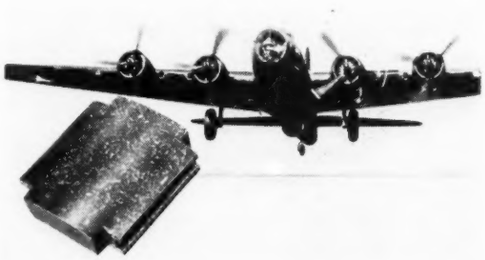
SPLINED-TYPE RIVET NUT suitable for use in wood, plastics, leather, hard rubber and other material where it is necessary to anchor firmly a nut for attaching accessories is now being adapted for use in many fields, including aircraft, automotive, refrigeration and electrical equipment. Splines beneath countersunk head supply resistance to torque while bulge or "upset" which forms below



end of the splines furnishes tension resistance. Splined Rivnut is thus locked into place two ways. Internal threads left intact within Rivnut shank take an attachment screw for installation of accessories. May be installed with same type tools regularly used for heading conventional types of rivet nuts in metal. These must be adjusted, however, to accommodate longer shaft of splined type. Made in three regular sizes, 6-32, 8-32 and 10-32 in aluminum or brass.—**The B. F. Goodrich Co., Akron, Ohio.**

COMBINATION-TYPE WELDING ELECTRODES, Airco No. 315, is designed to produce horizontal fillet welds with flat or slightly concave profiles and concave fillets in the flat position as well as satisfactory deep fillet and deep groove welds. Usual applications for new electrode include pressure vessels and their connections, heavy machine weldments, structural assemblies such as trusses, built-up girders and connections and practically all heavy steel assemblies where high weld quality is important. Electrode is recognizable by its steady, forceful spray-type arc. Thick, porous slag which completely covers weld deposit under practically every condition is readily removed. Electrode may be used with conventional technique, employing normal currents, under which conditions medium penetration is obtained. Deeper penetration is procured, however, when deep fillet technique is used with the high currents recommended for this procedure. May be used either with ac. or dc., straight or reverse polarity.—**Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.**

BRAKE BLOCK developed for heavy bombers has been tested on trucks, buses and industrial equipment for post-war use. Maker claims it has very

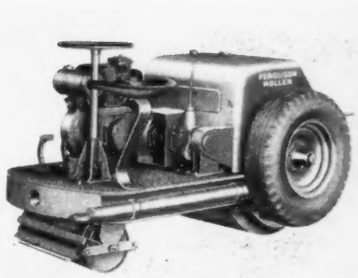


high density, exceptional wear, temperature resistance and stability. Can be engineered to meet special friction requirements.—**The Raybestos Division, Bridgeport, Conn.**

THREE CHARTS of revolving dial-window type, called Plane, Compound and Spherical Trig-Easy, aid workmen who lack knowledge of higher mathematics. Each has accompanying manual explaining use and how to work problems. Plane angle chart carries 48 accurate equations and manual tells how to solve right angle and oblique plane triangles. Compound angle chart has 48 accurate equations, with 112-p. manual containing 19 fully calculated problems of compound angles and more than 60 drawings, plus complete 6-decimal function table. It shows how to calculate unknown angles of compounds, find true angles, set up drilling holes or machining surfaces to compounds, find unknown angles within cubes, cylinders, conical shapes, etc., and calculate angles in airplane wings. Spherical angle chart contains 36 accurate equations and 16-p. instruction booklet shows how to solve right angle and oblique spherical triangles, calculate an arc from radius and vice versa. It includes 6-decimal radian conversion table.—**E. H. Needham, 3744 Robertson Blvd., Culver City, Calif.**

FLAT SURFACE LIFTING CLAMP facilitates lifting of light or heavy plates, barrels or other containers, stampings or welded assemblies, or any metal with sufficient flat surface to enable jaws of clamp to engage it. Picks up and securely holds object irrespective of position of clamp when attached and lifted, and releases instantly and automatically when load or weight is relieved from grip of jaws. Clamp has two definite clamping principles —(1) a pressure grip; (2) a wedge grip—making it impossible for load or article to slip even though coated with grease or oil. All working parts housed in strong drop-forged casing eliminating danger of parts being bent by exposure. Cantilever basic principle actuates one jaw, stationary jaw being of special construction assuring tremendous wedge power and grip. Four sizes: ½-, 1-, 3- and 6-ton capacities. Volz clamp will engage objects from 0 to 2 in. in thickness. Light in weight and individually tested to double their rated load. Grip is instantaneously effected in either a horizontal or vertical position when load is applied in lifting or pulling. —**Merrill Brothers, 46-18 Arnold Ave., Maspeth, N. Y.**

HEAVY-COATED HARD SURFACING ELECTRODE called "tufanhard," that welds like mild steel and is said to wear like a diamond is made in three grades, 600, 400 and 250, corresponding to Brinnel hardness of deposited metal. Although producing a hard alloy weld, it is claimed to have the ease and smoothness of operation ordinarily attributed to heavy coated mild steel rod. May be used in all positions with ease of so-called "cold" rod. Welds can be made continuously with overlapping beads without necessity of removing slag and low spatter loss and smoothness of bead requires only a small amount of grinding in finishing, making it economical to use. Deposit can be heated and drawn to any temper within range of type rod used. Operates on ac. or dc. current, straight polarity being recommended when using dc. machine. Made in 14-in. lengths, in ⅛-, 5/32-, 3/16- and ¼-in. sizes and packed in 5- and 25-lb. cartons.—**The Hobart Bros. Co., Electrode Div., Troy 1, Ohio.**



The Model 151 Ferguson Roller in action for the Michigan State Highway Department. Hundreds of these rollers are doing highly efficient jobs on maintenance work all over the United States and in foreign countries.

Trails TO THE JOB

Ferguson Maintenance Roller

Instantly and completely portable, the Ferguson Maintenance Roller is perfectly balanced and trails to the job.

Sturdy, safe, economical and easily operated, this popular model is doing an efficient job — for state highway departments, cities, counties, and departments of the Federal Government.

Its portability, its excessive power and bearing pressure place the "Ferguson" in a class by itself for compressing asphaltic concrete. Its portability, ability to do an efficient, economical job on patch work, alley paving, widening operations and shoulder treatment have made the "Ferguson" the most popular maintenance roller.

As each job is finished, pneumatic transportation wheels are lowered, tongue inserted, and the roller is ready for trailing to the next job.

SHOVEL SUPPLY COMPANY Manufacturers
4900 HINES, BLVD. • P.O. BOX 1369 • DALLAS 1, TEXAS
Write for Literature and Prices

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For Real Service —

LET LACLEDE SUPPLY YOUR REINFORCING NEEDS FOR CONSTRUCTION OF HIGHWAYS, BRIDGES, AIRPORTS, CULVERTS AND DRAINAGE STRUCTURES. DELIVERY IS MADE TO THE JOB SITE WHEN NEEDED — COMPLETELY ENGINEERED AND DETAILED — READY FOR PLACING. A FULL LINE OF REINFORCEMENT IS AT YOUR SERVICE.

Depend on Laclede

LACLEDE STEEL COMPANY
GENERAL OFFICES ARCADE BUILDING ST. LOUIS, MISSOURI

GIVE ME A LUFKIN TAPE WITH THE CHROME WHITE LINE THAT IS DURABLE
CHROME PLATED LINE WILL NOT CRACK, CHIP OR PEEL
JET BLACK MARKINGS ON CHROME WHITE SURFACE EASY TO READ
LUFKIN
Tough, husky Lufkin "Wolverine" Chrome Clad Steel Tapes built to withstand roughest usage. Jet black markings can't wear off, chrome plated line won't crack, chip or peel. Get Lufkin "Wolverine" from your dealer. Write for free catalog.
LUFKIN
THE LUFKIN RULE CO., SAGINAW, MICHIGAN, New York City

Specify THE BARROW THAT IS FORTIFIED BY A CONTINUOUS ONE-PIECE FRAME

STERLING'S Tubular Frame is a continuous, one-piece, reinforced steel tube made to take the stress and strain of tough, everyday hauling jobs. It assures a long, useful life for your STERLING Barrow. All parts are rigidly braced and supported to withstand hard usage. Specify this better barrow for your next job. While the material situation is still retarding deliveries, you can rest assured we'll ship as promptly as possible.

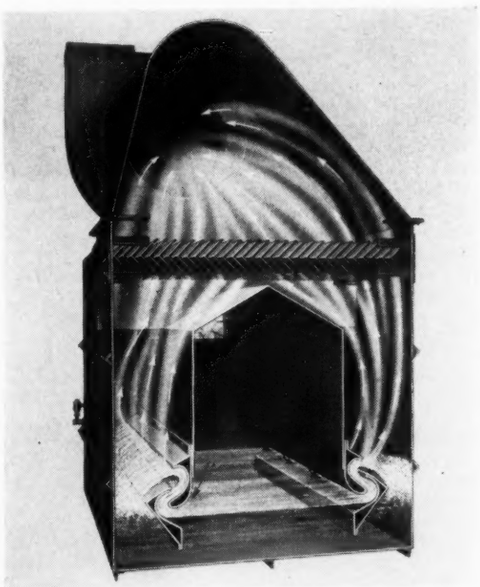
Sterling's TUBULAR FRAME

STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Look for this Mark of STERLING Quality

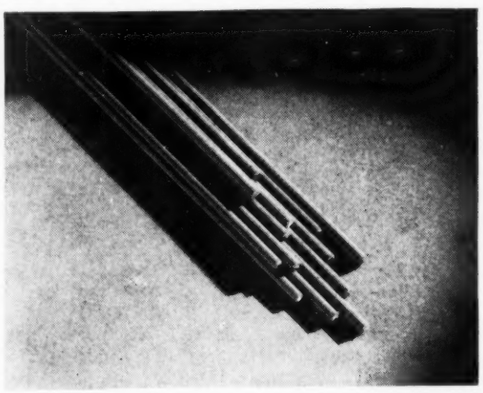
Sterling WHEELBARROWS

DUST COLLECTOR. Type "N," latest addition to Roto-Clone series, is based on the principle of hydrostatic precipitation, is compact, easy to install, and requires a minimum of space for operation. Absence of moving parts is claimed to make it ideal for safe control of linty and adhesive dusts from buffing operations and the exhaust of corrosive gases. Air is cleaned by combination of centrifugal force and intimate inter-mixing of water and dust-laden air. Air, forced through sinuous



passage of stationary impeller, induces a heavy sheet of water to move along surface of impeller blades creating a water curtain in the reverse "S" through which air must penetrate. High collection efficiency is result of impingement of dust in water due to centrifugal action in impeller and scrubbing action of water curtain which permits return of clean air to workroom. Manufactured in three classes and 13 sizes for the exhaust of air columns from 1,000 to 25,000 cfm.—**American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.**

HEAVILY COATED ELECTRODE is recommended for high quality welds on work which is not easily positioned. Available in seven diameters from 5/16 to 3/32 in. and with ac. and dc. reverse polarity, it forms light porous slag which is easily removed from each pass by light brushing. Is especially

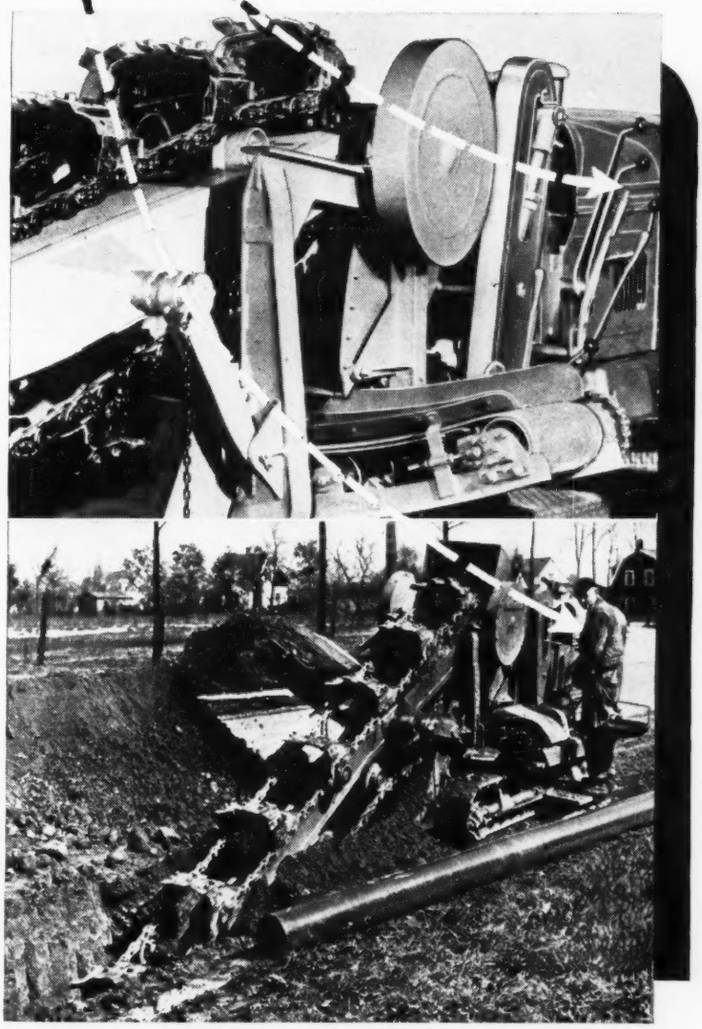


suited for heavy plate fabrication, shipyard operations, pressure piping, pressure vessels, and general structural steel work. Easy to handle on vertical and overhead work, it produces excellent results in making horizontal fillet welds and lap joints on all low and medium carbon steels, as well as low alloy and cast steels.—**Westinghouse Electric Corp., 306 Fourth Ave., Pittsburgh 30, Pa.**

simplicity

OF CONTROL —

Yet Maximum Range of Speeds and Feeds!



The Buckeye Model "410" Trencher is noted for its simple controls, yet it offers the operator:

All obtained by shifting easy-to-operate automotive type levers.

- 36 CUTTING FEEDS (.46 to 38 feet per minute)
- 6 TRAVEL SPEEDS—5 FORWARD, 1 REVERSE (.336, .59, 1.14, 2.05 and 2.67 M.P.H.)
- 4 BUCKET LINE SPEEDS (31.54, 106, and 189 feet per minute)

Check the many other features that make this outstanding trencher so popular with:

GENERAL CONTRACTORS—ROAD BUILDERS
UTILITIES—MUNICIPALITIES

COMPACT, MINIMUM WEIGHT, WITH BIG TRENCHER STAMINA. Width (exclusive of shiftable conveyor) only 4'9". Height only 6'10". Bearing Pressure only 6 lbs. per sq. in. Superior design, expert workmanship and quality construction throughout.

VERSATILE PERFORMANCE. Can turn in its own length. Digs trench from 18" to 24" wide. Digs trench up to 6' deep (7'6" optional).

Get complete specifications on Buckeye Model "410" Trenchers from your nearest Buckeye Dealer, or send for Bulletin No. 45, before you figure your next trenching contract.

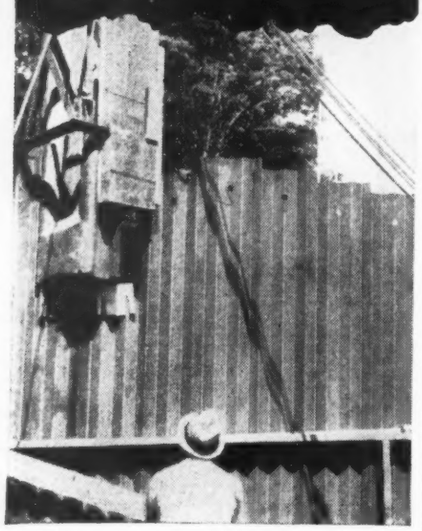
THERE'S A COST-CUTTING BUCKEYE TRENCHER FOR EVERY TRENCHING NEED.

BUCKEYE TRACTION DITCHER COMPANY
FINDLAY, OHIO

built by **Buckeye**

CONVERTIBLE SHOVELS—BULLDOZERS—ROAD WIDENERS
TRENCHERS—MATERIAL SPREADERS—R-B FINEGRADERS

FOR SPEED MAKE IT STEEL SHEETING



Sheeting jobs, whether permanent or temporary, are done quickly and economically with ARMCO Steel Sheeting. Check these advantages:

SAFE STRENGTH . . . ARMCO Sheeting is corrugated to assure ample strength with light weight. This makes for easy handling and quick installation.

EASY TO DRIVE . . . Light weight and small displacement area simplify driving. Sections butt together or are held securely in place by interlocking joints that assure the right alignment and practical water-tightness.

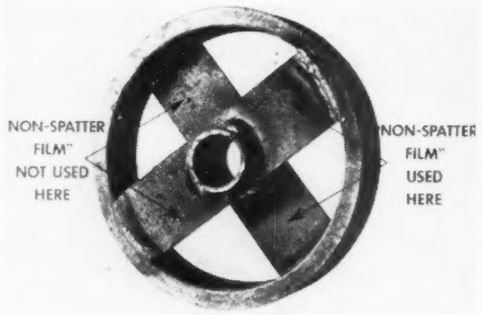
LOW COST . . . Besides economy of installation ARMCO Sheeting is low in cost. You buy the exact weight you need. Repeated use of the sheeting makes job costs surprisingly low.

ARMCO Sheeting is nestable and requires comparatively little space for shipment and storage. Write for prices and information on how ARMCO Steel Sheeting can better do your job. Armco Drainage & Metal Products, Inc., and Associated Companies, 2435 Curtis Street, Middletown, Ohio.

ARMCO

ARMCO STEEL SHEETING

"NON-SPATTER" WELDING FILM, liquid designed to minimize adherence of welding spatter to metal and reduce cleaning time, possesses following characteristics: (1) Welding can proceed after application, whether film is still wet or dry; (2) film can be sprayed or painted on work; (3) priming coats of paint may be readily applied over film; (4) film may be removed before painting by washing with water; (5) one application of film is effective for multiple-pass welding; (6) if film is sprayed

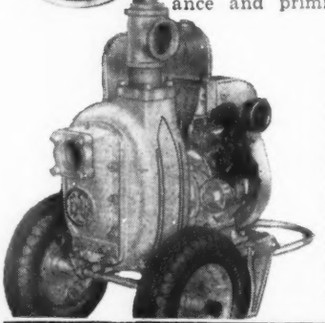


or painted on parts prior to being normalized, oxide film and ordinary scale can be removed more easily after heat treating; (7) material will freeze, but freezing has no effect on its properties when thawed out. "Non-Spatter" film is supplied in concentrated form in 5-gal. cans. By diluting concentrated material with three parts of water, 20 gal. of fluid is obtained. Either brush or air gun may be used to apply film to areas adjacent to joint to be welded and to welding jigs subjected to spatter. After welding, spatter can be easily removed by wiping or brushing, thus reducing cleaning time to minimum.—**The Lincoln Electric Co., Cleveland, Ohio.**

They Can Take It

DUAL PRIMERS

When it comes to DURABILITY, CMC Dual Primers have the "guts" to stand up to those tough, steady 24-hour grinds. DUAL PRIME means unmatched performance and priming speed.



A husky 3" CMC Dual Prime. One of the complete line from 1½" to 10" sizes. Also 3" and 4" Diaphragms. Get catalog.

CONSTRUCTION MACHINERY CO.
Waterloo, Iowa
Mixers • Pumps • Hoists • Batching & Placing Equipment • Saws • Carts • Barrows

Sonotube Saves

LUMBER
LABOR
TIME
MONEY

Ready to Pour CONCRETE

PIER and COLUMN FORMS

6 Standard Sizes

INSIDE DIAMETER					
8"	9"	10"	11¼"	12"	13½"
SQUARE INCHES					
50.26	64	78.54	100	113.1	144

Up to 24 Feet Long
Smaller Sizes Available

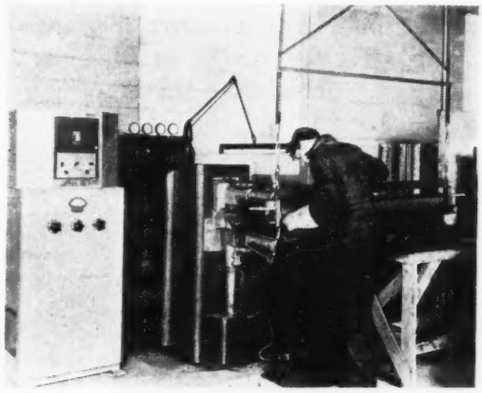
IMMEDIATE DELIVERY

Practical for Piers up to 7 feet and Columns up to 10 feet. Cut with hand saw to lengths on the job.

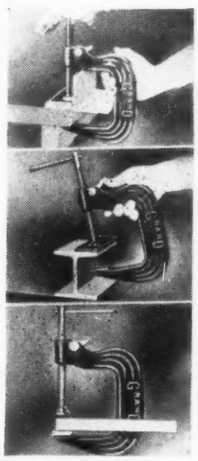
Write for Delivery Prices.

SONOCO PRODUCTS COMPANY
HARTSVILLE, S. C. MYSTIC, CONN.
ROCKINGHAM, N. C. GARWOOD, N. J. LOWELL, MASS.

STORAGE BATTERY OPERATED WELDER in the accompanying photograph is turning out fluted structural steel Naval ordnance sections 20 hr. per day at a rate of 1,440 spot welds per hour. It is installed in a plant having only a limited amount of power available and is coupled direct to the 220-v. shop wiring system through a battery charger which has a maximum 3-phase draw of only 26.7 kva. Parts being welded (⅛th to ⅛th steel) are arc-tacked before coming to the welder. Some 240 spot welds are required to finish each



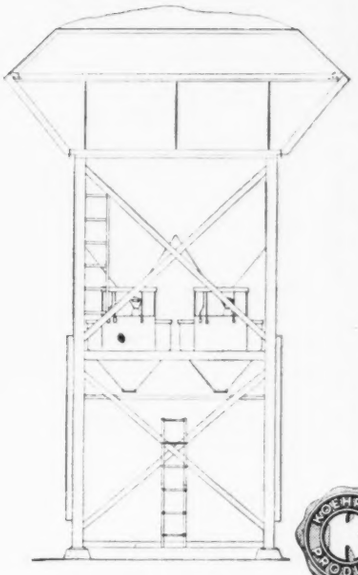
assembly. Output is approximately 6 units per hr., equivalent to a day's output of some 29,000 welds. To facilitate handling, unit to be welded is mounted in a swiveling quick-clamp fixture suspended through springs at approximate welding height from an overhead monorail. Welder is rocker-arm type, with batteries located in base of machine in place of conventional transformer. Although in continuous operation, the twelve battery cells are kept charged by the automatic charger with its peak draw of 80 amp., 3-phase. Service requirements to date have consisted mainly of adding water to the battery about once every three weeks and occasional point dressing.—**Progressive Welder Co., Detroit, Mich.**



EXTRA DEEP THROAT SPEED CLAMP known as type "C," incorporates a "quick action" feature which, according to its makers, enables it to be positioned instantly by pushing down on ratchet screw, eliminating waste time and motion required to run down conventional type of clamp screw, and tightening with turn of looseproof handle. Clamp is released by loosening handle and pushing with thumb or finger on trigger release pawl which frees ratchet screw so that clamp is ready immediately for application to work of varying sizes or thicknesses. Clamp holds work with firm tension grip on any surface, even slanting or irregular, and is equipped with replaceable ball-and-socket swivel to prevent shifting or creeping. Trigger release pawl has hardened teeth which holds a meshed grip under spring tension on ratchet screw while clamp is set. Protected against damage from welding spatter by copper plating on all working parts as well as on loose-proof handles. Rust-proofed with baked enamel finish. Line includes three sizes, as follows: 4¾-in. opening—4½-in. throat; 6¾-in. opening—4¾-in. throat; 8¾-in. opening—6-in. throat. Capacity of each size, 3,500 lb.—**Grand Specialities Co., Grand Ave. at Troy, Chicago 22, Ill.**

NOW! 1-STOP LOADING FOR 2-BATCH TRUCKS

AT YOUR *AGGREGATE PLANT* AS WELL AS YOUR BULK CEMENT PLANT



With the new Johnson Dual Aggregate Batching Plant, you can now take full advantage of 1-stop loading of 2-batch trucks at both the aggregate and the bulk cement plant. Johnson Dual Aggregate Batching Plant discharges both batches into a 2-batch truck simultaneously. Extra "spot-stops" are eliminated. On most jobs, the number of hauling units can be reduced. 100 yard, 3 compartment portable section bin is equipped with 2 multiple material batchers. One operator controls both batchers. (Of course, all Johnson Bulk Cement Plants may also be equipped with 2 batchers — for 1-stop loading of 2-batch trucks.)

KOEHRING PRODUCT

The **C. S. JOHNSON** *Company*

KOEHRING SUBSIDIARY • CHAMPAIGN, ILL.

OWEN CLAMSHELL BUCKETS INSURE A BIGGER DAY'S WORK

A MOUTHFUL at EVERY BITE

This is not only the claim of OWEN, the name symbolic of the highest grade Excavating and Handling Buckets for 40 years. — Operators everywhere, "on and off" the job, volunteer this testimony.

And—there's a reason. Owen-engineered buckets incorporate special features which have been continually improved.

THE OWEN BUCKET CO. Branches: NEW YORK • PHILADELPHIA
6020 Breakwater Avenue • Cleveland, Ohio CHICAGO • BERKELEY, CAL.

and MORE BITES PER DAY

STAY IN THE LEAD

By using the HI-WAY MODEL R

MATERIAL SPREADER

Reversible transmission on both the feed roller and agitator permits changing from forward to reverse motion, or vice versa, by simply shifting a lever.

The Swivel-type Adjustable Hitch allows the traction wheels of the Spreader to be on the ground at all times regardless of what position the truck or spreader is in. Easily coupled and uncoupled.

Disengaging lever for coupling and uncoupling is extended to the outside of the spreader, eliminating danger for the operator.

Sold and distributed by leading Construction Machinery Dealers throughout the United States and foreign countries.

Furnished in 6 widths—from 8 to 13 feet

Write for detailed specifications

HIGHWAY EQUIPMENT COMPANY, INC.

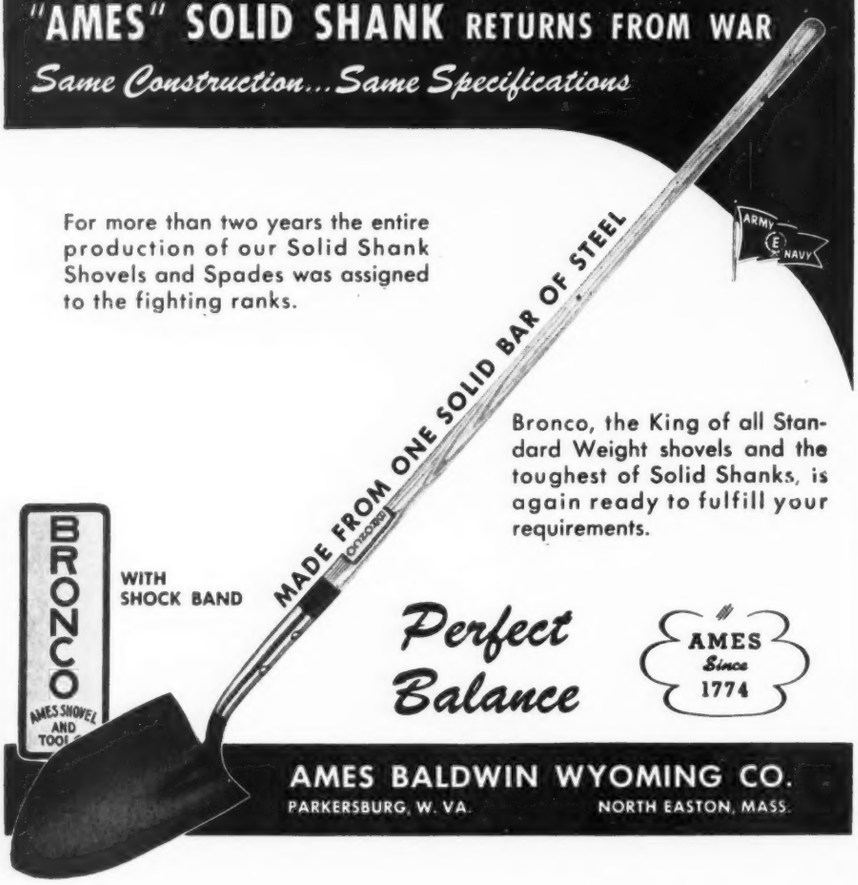
Manufacturers of the World's Most Complete Line of Spreaders

CEDAR RAPIDS, IOWA, U.S.A.

"AMES" SOLID SHANK RETURNS FROM WAR

Same Construction... Same Specifications

For more than two years the entire production of our Solid Shank Shovels and Spades was assigned to the fighting ranks.



Bronco, the King of all Standard Weight shovels and the toughest of Solid Shanks, is again ready to fulfill your requirements.

Perfect Balance

AMES *Since* 1774

AMES BALDWIN WYOMING CO.

PARKERSBURG, W. VA. NORTH EASTON, MASS.

NEWS FROM MANUFACTURERS

About Their Products

The publications reviewed below will keep you posted on latest developments in construction equipment and materials available for your use.

TRUCKS IN MINES AND QUARRIES—**Euclid Road Machinery Co.,** Cleveland 17, Ohio. (32 pp., illustrated) Contains natural color as well as black and white illustrations of 16 mine and quarry operations in many sections of United States. Highlights typical applications of rear-dump and bottom-dump trucks in open-pit mining of iron ore, bauxite, titanium, cinnibar, manganese, phosphate, anthracite and bituminous coal, and in dolomite and limestone quarries.

EXPLOSIVES CATALOG—SPANISH—**Atlas Powder Co.,** Wilmington 99, Del. (64 pp., illustrated) Lists all company's standard explosives and blasting supplies with their principal characteristics, strength, velocity, and cartridge count. Includes chapters on use of explosives in building roads, mining, rock and boulder blasting, and ditching. Tells how to prime and handle explosives and gives practical safety suggestions, all in Spanish language.

SELF-BONDING FLOORING — **Continental Asbestos & Refining Corp.,** 1 Madison Ave., New York 10, N. Y. (4 pp., illustrated) Describes Stonoleum as durable, crackproof, resilient, non-abrasive, self-healing flooring. Recommends its use in industrial plants, railroad stations, trestles, loading platforms and similar installations.

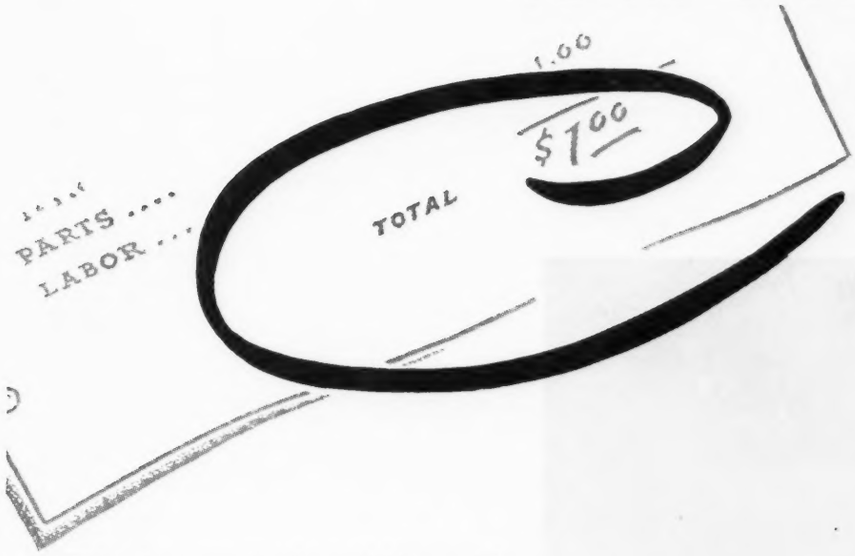
INDUSTRIAL SAFETY EQUIPMENT — **Stewart R. Browne Mfg. Co., Inc.,** 258 Broadway, New York 7, N. Y. (24 pp., illustrated) Pictures and describes portable tuffite flashlights, battery-operated inspection lights, vapor-proof and explosion-proof portable extension lights, aircraft engine inspection lights, and emergency grounding devices. Includes price information for all products.

TOUGH FLOORS FOR TOUGH CONDITIONS—**A. C. Horn Co.,** 43-36 Tenth St., Long Island City 1, N. Y. (4 pp., illustrated) Describes Ferem, "blue temper" component for use in place of sand and gravel or stone in floor toppings in dairy or creamery floors and in industrial plants where floors are subject to heavy traffic or where resistance to water, oil and dilute acid spillage is required. Gives mixing proportions and directions for new floors and for resurfacing or patching old floors.

98% OF ALL THE GENERALS EVER BUILT ARE STILL IN ACTIVE SERVICE!

22,000 HOURS OF OPERATION---

TOTAL COST OF REPAIRS

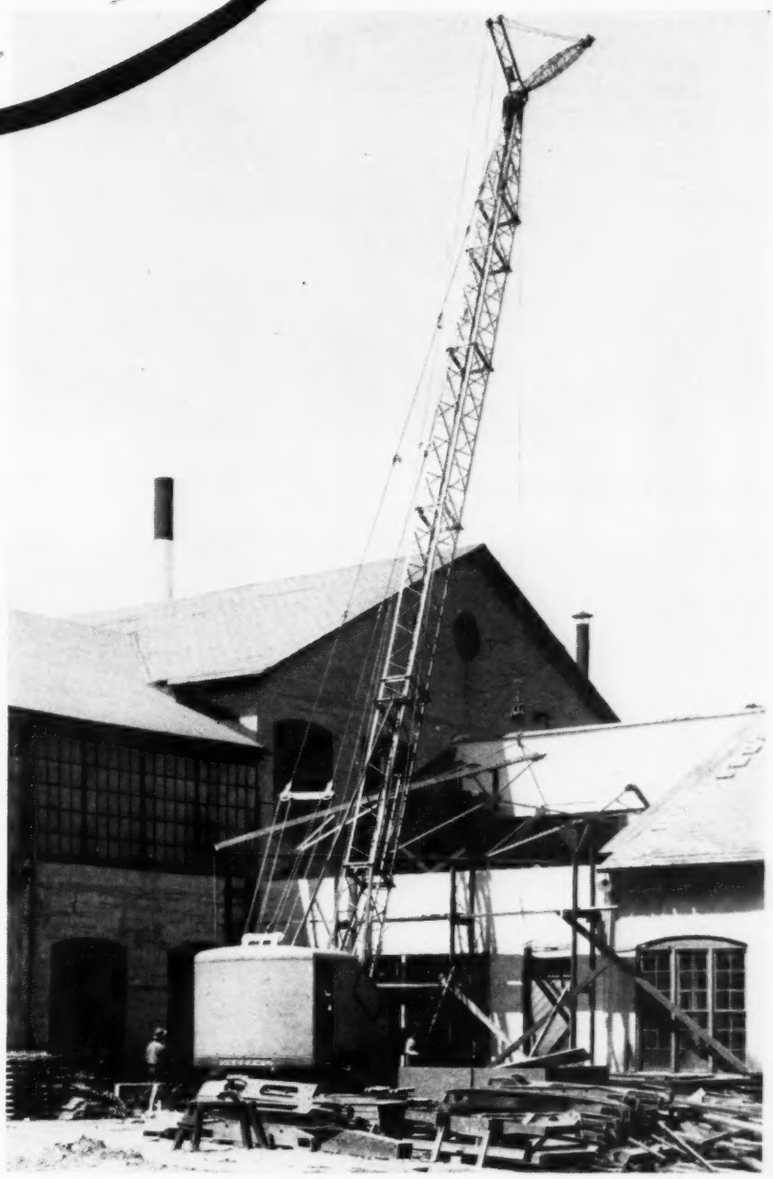


$1.00

There's a record to shoot at! A heavy duty ¾-yard GENERAL, owned by Mr. J. R. Savage, prominent Ohio construction man, operated an average of 20 hours a day for 3½ years, working alternately as pull shovel, clamshell, dragline and crane, and during that time the total cost of repairs to the unit was exactly ONE DOLLAR! That's keeping service costs at rock bottom!

And don't forget, this amazing record was compiled on all types of work . . . Mr. Savage keeps his equipment busy on every kind of job. This GENERAL took all the jobs, even the toughest ones, in stride. Right now, this unit is busy on a $750,000 project Mr. Savage has started for the Wheeling Steel Corporation.

Low-cost, efficient performance like this means lower bids, more work, greater profit. The record proves that General-built equipment will deliver cost-cutting performance, time and again. Remember, 98% OF ALL THE GENERALS EVER BUILT ARE STILL IN ACTIVE SERVICE. That's a factor worth considering when you're planning to purchase new equipment. Better get complete details on the new line of GENERALS soon to be available . . . it's the first step to greater profits!



THE OSGOOD COMPANY
SHOVELS, DRAGLINES
CRANES
CRAWLER & WHEEL MOUNTS
DIESEL, OIL, GAS, ELECTRIC

Associated with The Osgood Company

GENERAL EXCAVATOR CO.
MARION, OHIO

GENERAL
CRANES, DRAGLINES
AND SHOVELS
DIESEL, GAS, ELECTRIC

NATURALLY VIBER
IS OUT IN FRONT
BECAUSE VIBER CONCENTRATES ON HIGH-SPEED INTERNAL
VIBRATORS
(9500 R.P.M. IN CONCRETE)
EXCLUSIVELY

For 15 years, Viber has been a world leader in concrete vibration "know-how" by concentrating on the one single development.

This has made Viber vibrators outstanding—so dependable that their contractor owners have experienced unparalleled freedom from service expense. It has also made Viber the leader in concrete vibrator sales.

Today, Viber is still concentrating on the finest, most efficient internal vibrators we've ever built and the top value in the entire concrete vibrator field.

AIR

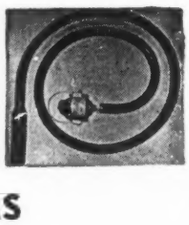
• FEXIBLE PNEUMATIC VIBRATOR

Made in 1¾", 2⅛" and 3" diameter with 12 ft. and 21 ft. flexible shaft. Complete interchangeability of flexible casings, cores, vibrators. Operates on 80 lbs. pressure.

ELECTRIC

• FLEXIBLE ELECTRIC VIBRATOR

Made in 1¾", 2⅛" and 3" diameter with 12 ft. and 21 ft. flexible shaft. Complete interchangeability —Flexible Casings, Cores, Vibrators, Universal type motor. Built-in protective "ground."



GAS

NEW FEATURES "GAS" VIBRATOR

Mercury clutch, entirely automatic, picks up load at 1500 r.p.m. allowing engine to idle without running vibrator, eliminates stalling, makes starting easy in cold weather.

Upsetting is practically eliminated in mounting. Handles allow complete unit to be easily carried.

ALL MODELS ARE AVAILABLE FOR IMMEDIATE DELIVERY NO PRIORITY NEEDED

VIBER COMPANY
726 South Flower St.
BURBANK, CALIFORNIA

INDUSTRIAL ENGINES—**Hall-Scott Motor Car Co.,** Berkeley, Calif. (20 pp., illustrated) Pictures and gives specifications for Series 400 engines. Shows units at work on variety of jobs. Sectional views and drawings giving installation dimensions are included.

PRINTER-DEVELOPER—**Charles Bruning Co., Inc.,** 4754 Montrose Ave., Chicago 41, Ill. (4 pp., illustrated) Covers Model 41 which combines printer and developer in single compact unit. Describes outstanding features and gives specifications. Also lists other copyflex and BW equipment.

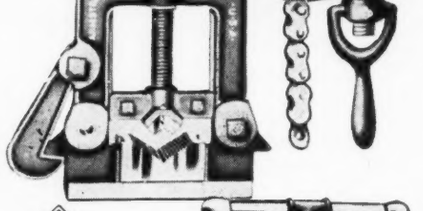
WELDING ACCESSORIES—**Air Reduction Sales Co.,** 60 E. 42nd Street, New York 16, N. Y. (16 pp., illustrated) Up-to-date price list and catalog of Airco gas welding and cutting supplies and accessories contains illustrations, descriptions, engineering data and current prices. Types of equipment covered include welding rods, brazing and welding flux, hose, brazing alloys, goggles and spectacles, gloves for gas welding and cutting and sparklighters and tips. Also listed are: carbon rods and plates, hardfacing rods, cobalt borium inserts, pea borium and other items. Information on properties and uses and precise quantitative data are supplied, supplemented by photographs and sketches. Ordering is facilitated by listing of sizes and stock numbers.

SURFACE WITH EMERY—**Emery Floor Division, Washington Mills Abrasive Co.,** 18 E. 41st St., New York 17, N. Y. (Seven descriptive leaflets, illustrated) Carries descriptions, price lists and reference tables for engineers, architects and maintenance men.

WRINKLE-BENDING—**The Linde Air Products Co.,** 30 E. 42nd St., New York 17, N. Y. (8-p. booklet) Gives general outline of wrinkle-bending procedure, including advantages and field applications of process, kinds of pipe that can be wrinkle-bent, and instructions on how to lay out and make wrinkle-bend.

CENTRIFUGAL PUMPS—**Economy Pumps, Inc.,** Hamilton, Ohio (416-p. engineering data book) Covers principles of pump engineering, testing of centrifugal pumps, model tests, suction lift of centrifugal pumps, friction of water in pipes, both iron and brass, loss of head true valves and fittings, and selection of material for corrosion resistance. Includes measurements of water supply for weirs, nozzles, orifices, etc; general properties of metals and alloys; dimensions of pipe and flange fittings; motor wiring tables; weights and specific gravities; and circumferences and areas of circles. Discusses paper stock pumping; approximate efficiencies of power factor of electric motors; capacity of drainage and water supply pumps for buildings and swimming pools; and irrigation and golf course watering. Catalog data covers efficiencies and prices of pumps, electric motors and pump accessories. Free to pump users and engineers, $2 to others.

Look for the Arm-and-Hammer
ARMSTRONG BROS.
BETTER PIPE TOOLS

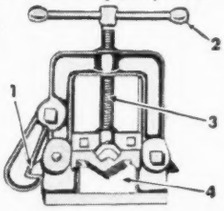


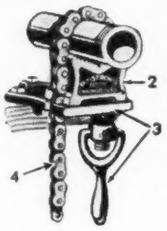
Only "ARMSTRONG BROS." Pipe Vises offer all these important features:

Solid centered jaws that prevent bending of small pipe, thin walled conduit and tubing. Oval-ended handles that will not pinch hands. Extra strength where strength is needed . . . and a fineness of design and an accuracy in machining that marks each a quality tool.

Standard Pipe Vise

1. Unbreakable drop forged steel hooks.
2. Oval handle ends, will not pinch hands.
3. Special steel screws with long-wear threads.
4. Replaceable tool steel jaws, small sizes with solid centers.



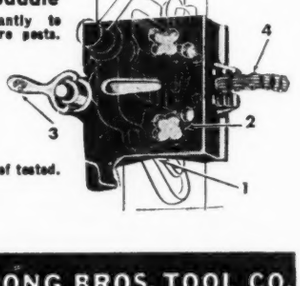


Chain Pipe Vises

1. Portable. Combines maximum capacity with minimum weight.
2. Jaws drop forged with patented solid centers.
3. Drop Forged Handle and Base, with hardened Nut and special steel Screw.
4. Proof-tested Chain.

Pipe Vise Saddle

1. Attaches instantly to round or square posts.
2. Slotted to hold standard vises of all makes.
3. Handle drop forged with hardened steel nut.
4. Link chain proof tested.



ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"
334 N. FRANCISCO AVE. • CHICAGO, U. S. A.

Eastern Sales Office: 109 Lafayette St., N. Y. 12, N. Y.
Pacific Coast Office & Whse.: 1275 Mission St., San Francisco 3, Calif.

BLOW AND SPRAY GUNS AND WATER SAVERS—**The B. F. Goodrich Co.,** Akron, Ohio. (22 pp., illustrated) Explains principle of Lonn valves which have three working parts and give constant fingertip control of air or water under pressure without use of levers, springs, push buttons, packings or screws. Elimination of small parts the booklet explains, reduces repair and replacement problems and results in low maintenance cost. Feature of booklet is charts which show cost of air or water delivered through various-sized orifices when uncontrolled. When Lonn gun is used, unusual savings are claimed to be accomplished.

WELFARE CLUB—**Ilg Electric Ventilating Co.,** 2850 N. Crawford Ave., Chicago, Ill. (12-p. booklet) Outlines historical development and results of company's personnel policies and practices. Explains profit-sharing plan, vacation policy, employee organization, health plan and other practices.

INDUSTRIAL RUBBER GOODS—**Goodyear Tire & Rubber Co.,** Akron 16, Ohio. (48 pp., illustrated) Carries complete product information and construction details on company's standard line industrial rubber products. Provides quick facts about synthetic rubber constructions in currently produced mechanical rubber products. Special sections cover belting (agricultural, conveyor, elevator, transmission, pulley lagging, railroad axle lighting, and V-belts); industrial hose (acid, air, fire and mill, garden, sanitary and creamery, spray, steam, suction, water, welding and miscellaneous); hose for oil industry (butane and propane, fuel oil, gasoline pump, oil suction and discharge, rotary, tank filler, and tank truck); automotive hose; sheet packing; rubber linings; molded goods; and printers' supplies.

STRUCTURAL DESIGN STANDARD FOR LUMBER—**National Lumber Manufacturers Assn.,** 1319 18th St., Washington 6, D. C. (64 pp., illustrated) Entitled "National Design Specifications for Stress-Grade Lumber and its Fastenings." Applies to stress-grade lumber and its fastenings when properly identified as to grade. Provisions are suitable for inclusion in building codes and specifications directly or by reference. It is intended for application in engineering structures where strength is major consideration. Material is logically arranged and well cross-referenced for ease in finding specific data and provisions. Lists allowable design stresses for commercial stress-grades of lumber and allowable design loads for fastenings. Provisions and data of standard are subdivided into chapters on general provisions, allowable unit stresses for stress-grade lumber, design loads, design formulas and provisions for beams, columns and trusses, timber connector joints, bolted joints, lag screw joints, nail, spike and drift pin, wood screw joints, and glued laminated structural members. Copies are 25c. each.

FLASHLIGHT BATTERIES — **Ideal Commutator Dresser Co.,** 1286 Park Ave., Sycamore, Ill. (illustrated folder) Describes rechargeable flashlight battery and gives specifications. Also mentions chargers and testers.

The Buffalo-Springfield forward and reverse 4-speed transmission provides a speed range from 1.5 to 5.0 M. P. H. so that you can select the speed to fit the job without throttling the engine. This means full engine power at all times! Operation is more efficient and rolling is smoother. This transmission is not complicated. It has fewer shafts than conventional three-speed transmissions! Ask for 16 page catalog decribing 13 points of superiority.

- **Three Wheel Rollers—6 to 12 tons**
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THE STANDARD OF COMPARISON

BUFFALO SPRINGFIELD

SPRINGFIELD, OHIO

Photograph courtesy of Diamond T Motor Car Co., Chicago, Ill.

The above typical service application shows a Wisconsin single cylinder air-cooled engine *on the job,* in a gravel dredging and washing operation in Mendicino County, Cal.

Wisconsin single and 4-cylinder air-cooled engines, from 1 to 31 hp., are giving good accounts of themselves in a great variety of applications, on many types of contracting and industrial equipment where heavy-duty serviceability and freedom from cooling troubles and attention are important operating factors. Specify Wisconsin Power for your equipment.

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World's Largest Builders of Heavy Duty Air-Cooled Engines

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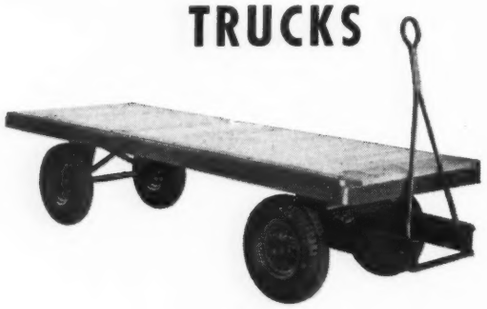
"The Name that Carries Weight"

MATERIAL HANDLING EQUIPMENT

PNEUMATIC-TIRED TRAILER TRUCKS



Type shown 2-ton capacity. Fifth wheel steer. Pneumatic-tired wheels. Roller bearing mounted. Hardwood deck. Edges reinforced.

Trailer Trucks. Rubber Tired (Pneumatic, Solid) and Steel Wheels. Also Caster types. All capacities up to 30 tons. Designed by engineers whose reputation is founded upon doing things right. Literature available. Inquiries invited.

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GOGGLE AND GLASS CLEANER—**Allen Optical Co.,** Buffalo, N. Y. (4-p. folder) Liquid called Sani-Spray cleans goggles and glasses in one application making work easier, increasing efficency and relieving eyestrain caused by cloudy glasses. Applied by use of a self-contained, heavy-duty atomizer designed for applying Sani-Spray. Heavy-gage, all-metal cabinet holds quart jar (refillable), a supply of tissue paper and a built-in receptacle for used tissue. Push-button control releases fine atomized spray from side orifice in cabinet. Pressure for ejecting spray is provided by connecting to standard plant air line. Adjustment is provided for regulating flow of Sani-Spray on to goggles or glasses. Tamper-proof cabinet permits all contents—control valve, spray and tissue—to be kept under lock and key. Cabinets 12 x 12 x 5 in. in size, require only minimum of wall space and may be located conveniently throughout the plant.

MACHINE OF TOMORROW—**General Excavator Co.,** of Marion, Ohio. (Two-color illustrated folder) Presents ½-yd. self-propelled rig (Type 10 Model 105) which combines functions of shovel, crane and dragline all in one. Includes series of detailed descriptions covering power flow, construction and operation. Large pictures with brief factual text portray features and advantages, which include 20-mph. highway speed; metered air control; fully independent travel, swing and boom; optional 4-wheel drive; air booster steering; heavy-duty engine, transmission and clutches; 4 speeds forward and reverse; easily accessible assemblies; quick changeover to any front-end attachment, and long life.

FABRICATED STRUCTURAL STEEL—**American Institute of Steel Construction,** 101 Park Ave., New York 17, N. Y. (8 pp., illustrated) Describes services offered by Institute. Lists publications available. Contains pictures of well-known buildings with steel erection by A.I.S.C. members.

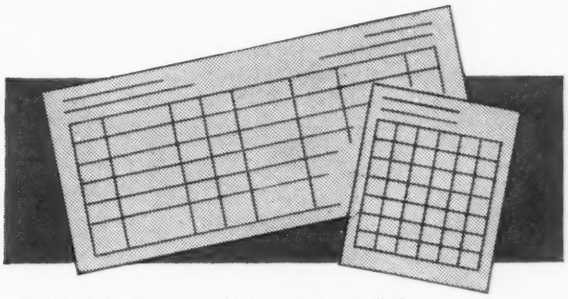
HEATING AND MELTING EQUIPMENT—**Hauck Manufacturing Co.,** 124-136 Tenth St., Brooklyn 15, N. Y. (12 pp., illustrated) Describes and gives specifications for: Torch flame burner equipment, fire guns, weed burners, lead and compound melting furnaces, steam thawers, salamanders, concrete heaters, ground thawers, water heaters, and tar and asphalt melting kettles. Among new items reported are compound melting furnaces with burners for heat control.

EARTHMOVING AND CONSTRUCTION EQUIPMENT—**R. G. LeTourneau, Inc.,** Peoria, Ill. (24 pp., illustrated) Provides latest information on modern high-speed earthmoving and lifting equipment. Describes and pictures company's entire equipment line and distributor shop and service facilities. Detailed showroom-type photos are supplemented by on-the-job action pictures of equipment in various applications. Operational features of each tool are described and specifications given and improvements over older models are described in detail.

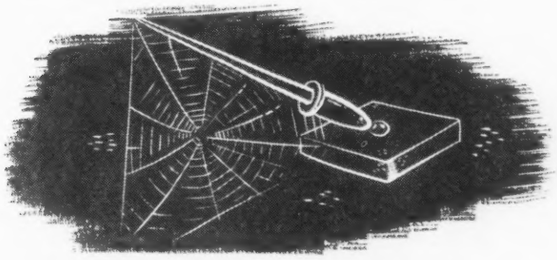
Peacetime or wartime Streamlined P. M. pays out

Preventive Maintenance played a large part in keeping overworked buses, trucks and contractors' equipment in the fight on the home-front during the war years. Now it can play an even greater part in your battle against high fleet operating costs.

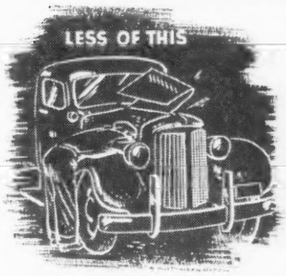
That is why Standard Oil continues to offer its Streamlined P.M. Plan to fleet operators in the Midwest. It is Streamlined because it is one of the simplest, workable P.M. plans available. Here are some of the advantages:

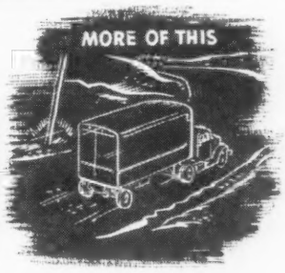


• **Two forms** are all that are needed.



• **Record keeping** is reduced to the minimum.





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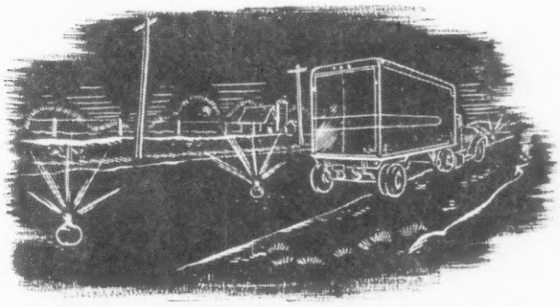


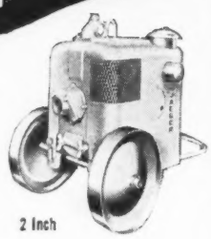
• **Reduces road failures** and lengthens life of new and old equipment.

A Standard Automotive Engineer will gladly show you how simple this plan is and help you get started saving with "Streamline" Maintenance. Write Standard Oil Company (Ind.), 910 S. Michigan Ave., Chicago 80, Ill.

STANDARD OIL COMPANY (INDIANA) STANDARD SERVICE

JAEGER BUILDS BETTER PUMPS *INSIDE and OUT*

Modern enclosures protect engine efficiency...add longer life



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Experienced contractors buy far more Jaeger "Sure Primes" than any other make of pump. They know that all "Sure Prime" pumps are better engineered, conservatively rated, powered with high grade engines and enclosed in modern housings that keep those engines dry, clean, quick-starting and smooth running for extra thousands of hours of low cost service.

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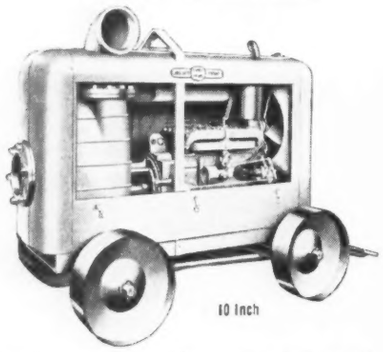

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Instant opening side panels admit to all operating controls. Enclosures are also designed to lift off or swing open for complete access when desired. One of many exclusive Jaeger advantages.

Capacities 3000 to 240,000 g.p.h.

Only Jaeger Offers All These Features:

Inherent priming action plus "jet" priming—fastest and doubly sure . . . "Lubri-Seal," accessible for inspection . . . Self-cleaning shells . . . Replaceable liners or seal rings . . . Pumps individually tested and certified for performance.

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POST-WAR BUILDING PRODUCTS—**The Producers' Council, Inc.,** 815 Fifteenth St., Washington 5, D. C. Technical bulletin presents complete line of new modular sizes of metal windows, new designs in bathroom fixtures made from non-critical vitreous materials, improved methods of baseboard panel radiation to maintain more even temperatures from floor to ceiling in homes, awning type windows with simple controls which open and close all panes simultaneously and standard sizes of household shower cabinets manufactured complete with precast receptors. Other products expected to be available are: threadless, non-ferrous pipe and fittings to be assembled with the use of solder; lumber especially treated to resist attack by fire, insects and rot; an improved form of asphalt tile which is adapted for heavy-duty service and provides resistance to denting and a non-sparking, non-slip surface; light steel sections for use in residential construction and many types of commercial structures, and improved insulation for electrical wiring which increases the current carrying capacity and decreases the size of conduits and fittings.

NERVOUS WELD PROCESS—**Metallizing Co. of America,** 1330 W. Congress St., Chicago 7, Ill. (4 pp., illustrated) Gives complete information on Mogul nervous weld process which makes possible positive method of salvaging defective aluminum castings. Bronze, gray iron, malleable and steel castings can also be reclaimed by this process. Contains description of pistol and machine, as well as prices for complete installation. Describes other applications for unit, such as plugging holes, building up shrinkage fissures, changing contours on molds and building up dimensional surfaces on parts that have not cleared up properly.

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Superior Quality

BLADES AND CUTTING EDGES

For any make of machine
Motor Graders, Maintainers, Scrapers, Drags, Bulldozers, Backfillers, Wagon Scrapers, Trail Builders, Trail Blazers, Carryalls. Also—

CUTTING EDGES
WEARING BOOTS
BACK SLOPERS
EXTENSION BLADES
MOLDBOARDS
and
SCARIFIER TEETH

50 years of manufacturing blades has developed for you a special steel, milled through our own rolls and forged at the edges to give that extra wearing quality you need.

All widths, lengths, and thicknesses. Punched ready to fit your machine.

Consult your internationally recognized Blade Specialists. Write for special bulletins, giving type and name of machines you operate—get set for Blades early.

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MANUFACTURING COMPANY

Established 1854

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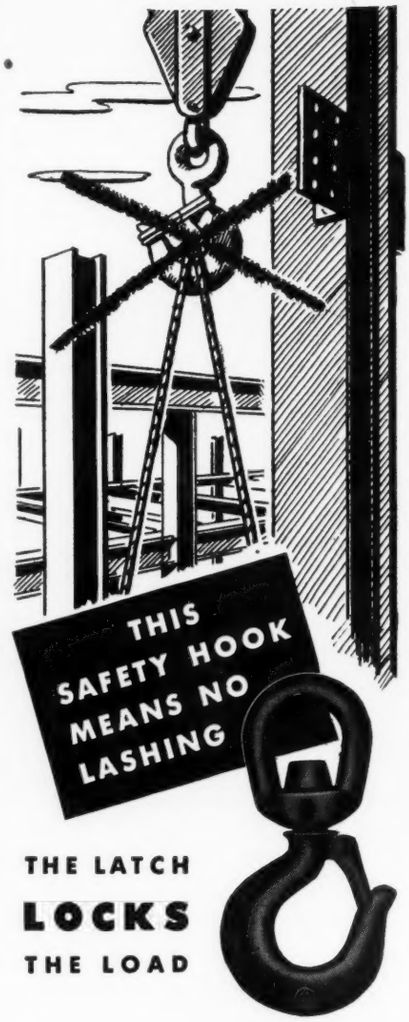


THIS SAFETY HOOK MEANS NO LASHING

THE LATCH LOCKS THE LOAD

When Laughlin's newly-designed latch — providing about 80% of an ordinary hoist hook's throat opening — replaces rope lashing for securing the load in the hook, you not only speed up the job but also make safety *certain*. That's because the men who are *supposed* to lash loads, but *often don't* are relieved of the responsibility.

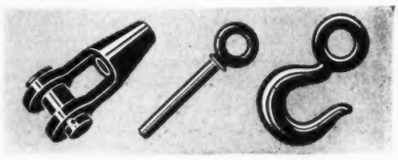
Get better acquainted with these sturdy, drop-forged, heat-treated, standard-type hooks . . . made safe by dependable latches and stainless steel springs . . . ½ to 15 ton safe load.

WRITE FOR CATALOG

All Laughlin hooks — safety, hoist, cargo, etc. — are heat-treated, drop-forged, weldless. Distributed through mill, mine and oil field supply houses. Write (Dept. 1) for catalog. The Thomas Laughlin Co., Portland 6, Me.

LAUGHLIN

THE MOST COMPLETE LINE OF DROP-FORGED WIRE ROPE AND CHAIN FITTINGS



NEWS OF
EQUIPMENT MEN

Four new vice-presidents were elected by F. H. McGraw & Co., engineers and constructors of Hartford, Conn. They are (left to right): **Frederick J. Mayo,** New York and New England district; **Albert P. Durso,** Pittsburgh district; **Murray E. Johnson,** Gary,

Ind.-Chicago, Ill. district; and **Donald W. Neville,** western district. **Clifford S. Strike** (extreme right) was re-elected president. Mr. Strike had been on leave of absence to the government for 8 months, serving in Germany as chief of the Building Materials, Construction and Forestry Office of the U. S. Military Government and later as U. S. delegate on the Reparations Commission.

A conservation bureau, headed by **Ezra C. Wenger,** has been established by the Portland Cement Association, Chicago, Ill., to correlate technical information and assist users of concrete. Mr. Wenger has been regional highway engineer for the association in six midwestern states for the past 11 years.

Sales and advertising for Consolidated Diesel Electric Co., Mount Vernon, N. Y., will be supervised by **Stuart E. Halliday,** former sales manager of Novacal Chemical Co.

Oscar W. Nelson has been appointed vice-president and general manager of the Peoria plant of R. G. LeTourneau, Inc. He was formerly general manager of the Beaver, Pa., plant, propeller division, Curtiss Wright Corp.

Welded Construction
MAKES A BIG DIFFERENCE...
WELLMAN
Williams Type **BUCKETS**

• Wellman leads the field in welded bucket construction. Wellman improved design means *better service, lower cost for you!* A type for every purpose: Multiple Rope, Power Arm, Dragline, Power Wheel, Special Service; ⅜ to 16½-yd. capacity.

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THE WELLMAN ENGINEERING COMPANY
7017 CENTRAL AVENUE • CLEVELAND 4, OHIO

The Pump with the "Built-In" Insurance Policy!

10 M

Yes, every contractor's pump bearing an AGC rating plate has a built-in insurance policy. For that plate is your assurance that the pump will deliver full rated capacity . . . that not only pump size but performance and capacity are guaranteed as well.

Many a contractor buys his pumps on size . . . that is, on the size of the suction and discharge openings. But, unless the pump has earned the right to bear an AGC rating plate, size alone does not measure capacity.

Buy pumps bearing the AGC rating plate, and be sure in advance of capacity and performance.

CONTRACTORS PUMP BUREAU

BARNES MANUFACTURING CO. Mansfield, Ohio
CHAIN BELT COMPANY Milwaukee, Wis.
JAEGER MACHINE CO. Columbus, Ohio
O. H. & E. MANUFACTURING CO. Milwaukee, Wis.
CONSTRUCTION MACHINERY CO. Waterloo, Iowa
MARLOW PUMPS Ridgewood, N. J.
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THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA, INC.
STERLING MACHINERY CORP. Kansas City, Mo.
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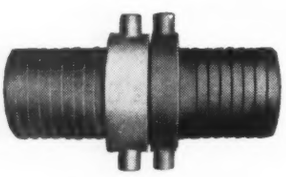
DIXON Products Provide Exclusive Service Advantages

"KING" COMBINATION NIPPLE

With Patented "Cor-o-Zig" Corrugations

Malleable iron or brass. Made to fit straight end hose. Two-way "Cor-o-Zig" corrugations permit easier insertion in hose and assure tighter grip under clamp pressure. Sizes ½" to 8", inclusive.



"KING" SHANK COUPLING

For Suction and Water Hose

Durable, convenient, economical. Made in three styles—all malleable iron; malleable iron, brass nut; all brass. Uniform in quality, threading and dimensions. Sizes 1¼" to 8", inclusive.

"KING" HOSE CLAMPS

Single and Double Bolt

Made of malleable iron. Easy to attach, and can be used over and over again. Tightening provides evenly distributed pressure around entire hose circumference. Double bolt style has quadruple take-up. Full range of sizes.

Stocked by Manufacturers and Jobbers of Mechanical Rubber Goods

IF IT'S A DIXON BOSS PRODUCT

IT'S DEPENDABLE

DIXON
VALVE & COUPLING CO.
Main Office and Factory: PHILADELPHIA, PA.
BRANCHES: CHICAGO · BIRMINGHAM · LOS ANGELES · HOUSTON

Expansion of the research program of the gypsum industry has been initiated with the appointment of Lieut. Chester Abbey, U.S.N.R., as research engineer of the Gypsum Association, Chicago, Ill.

R. C. Owens has turned to his position as secretary of The Osgood Co. and The General Excavator Co., of Marion, Ohio after nearly 3 years with the U. S. Navy, in which he held the rank of lieutenant.

Controlling stock interest in the H. O. Penn Machinery Co., Inc., of New York, Poughkeepsie, Mineola, N. Y., and Newington, Conn., has been acquired by **Ralph L. Johnson** and **Stuart A. Wade.** Mr. Johnson has been named president and Mr. Wade vice-president and general manager for the company, which was founded in 1923 by the late Hamilton O. Penn to serve as distributor for many lines of heavy construction equipment.

Junior Model with Horizontal Frame Attachment.

Will break 15 inch reinforced concrete walls up to 10 feet high. Frame attachment can be removed and boom tipped up to vertical position for breaking all types of pavement.

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And prepared by a staff of sixty-three well-known engineers, each a specialist in his field.

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COVERS the how and why of foundation and substructure design and construction, the general theory of structural members, the detailed design of such members and the design of their connection with other members.

EXPLAINS the principles of statics, reactions, moments and shears in beams and trusses, influence lines, methods of computing stresses in lateral trusses and portal bracing.

GIVES details of design and construction of steel, timber and concrete structures of all types.

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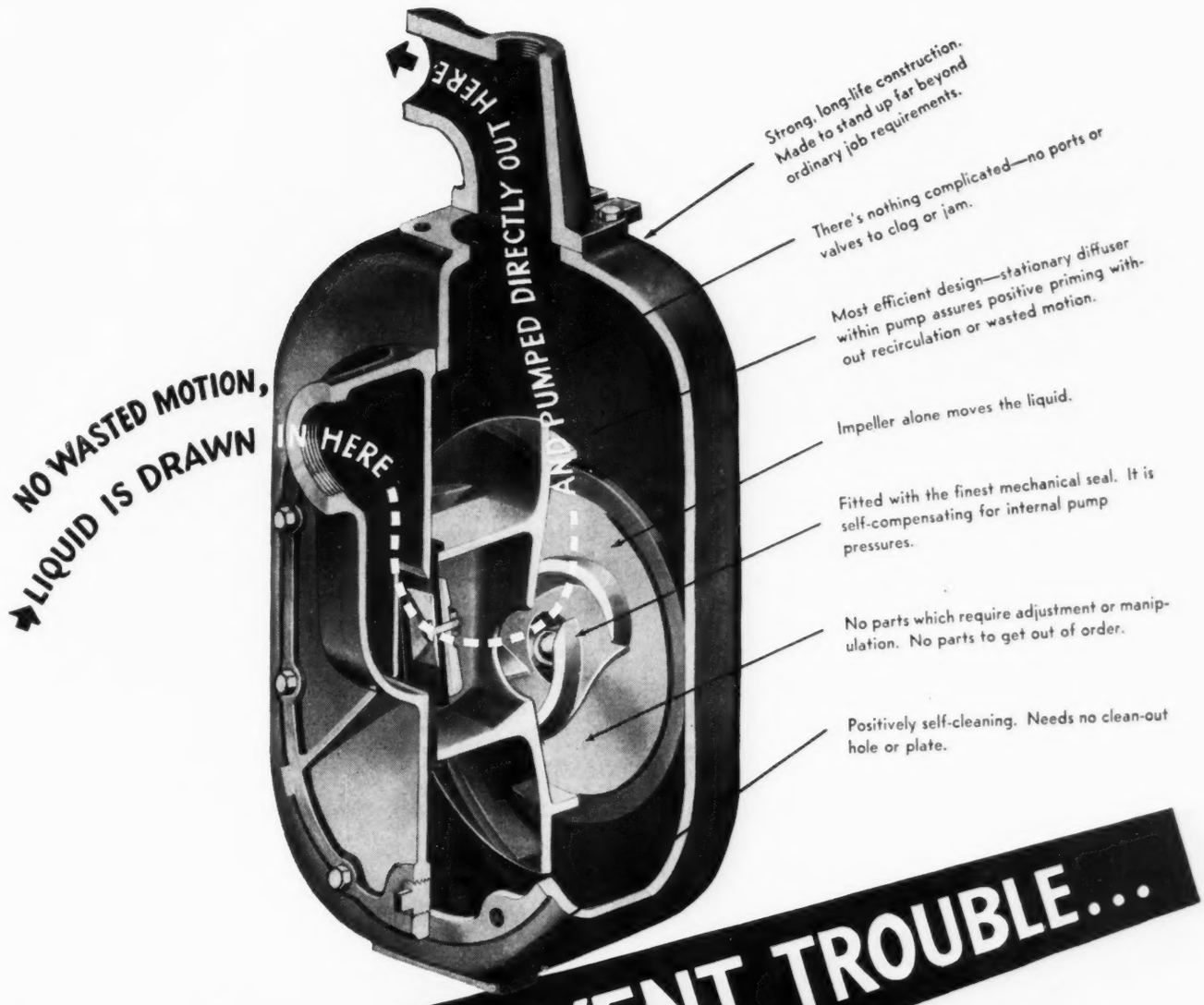
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LIQUID IS DRAWN IN HERE
AND PUMPED DIRECTLY OUT HERE
Strong, long-life construction. Made to stand up far beyond ordinary job requirements.
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Fitted with the finest mechanical seal. It is self-compensating for internal pump pressures.
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Moreover, Marlow "Water Wizards" are constructed stronger than is necessary. They have an *extra margin of stamina*, which enables them to keep going dependably, even under extremely difficult conditions. No other pumps have such performance records.

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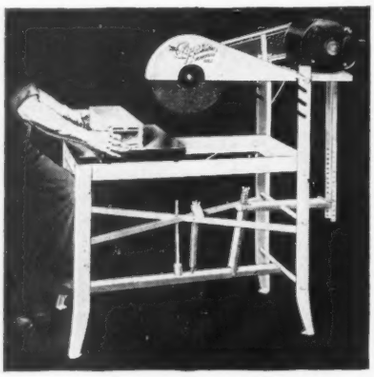
Your Special Size and Shape Brick or Concrete Block can now be "Tailor-Made" at a moment's notice!

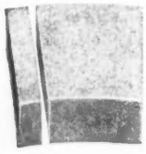


The new Clipper Multiple Cutting Principle makes possible faster cutting of every masonry material regardless of hardness.

Here are a few typical examples of the speed and accuracy with which concrete products and fire brick can be cut.

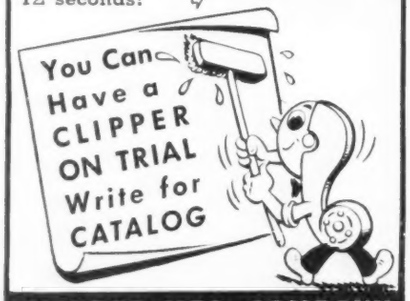
This concrete block, converted into a special size, was cut completely in two in 19 seconds.

One of the many intricate cuts performed on first quality clay brick for heat treating furnaces—made in 8 sec.



Rotary Kiln Blocks, cut to size for "key" bricks in rotary kilns, require only 10 sec. for completion of cut.

Basic refractories for steel furnaces or cement kilns must be accurately installed. This magnesite brick was cut in 12 seconds!



CLIPPER MFG. COMPANY
4035 Manchester, St. Louis 10, Mo.

Theodore "Ted" Shaffer, Jr., has opened the Shaffer Equipment & Supply Co. in Richmond, Va., as distributor for the Link-Belt Speeder Corp., Hazard Wire Rope Co., Standard Steel Works, DeSoto Foundry Co., Cincinnati Rubber Mfg. Co., The Toledo Pressed Steel Co., Ralph B. Carter Co., and Hercules Motors Corp.

The J. K. Wheeler Mfg. Co. has been formed in Salt Lake City, Utah, to represent R. G. LeTourneau, Inc., Link-Belt Speeder Corp., Worthington Pump & Machinery Co., Ransome Machinery Co., and Cleveland Trencher Co.

Caterpillar Tractor Co., of Peoria, Ill., has formed a manufacturing development division under direction of **C. A. Matheny,** who formerly served as factory superintendent at the Peoria plant and as works manager of Caterpillar Military Engine Co. The new division will screen ideas for the improvement and development of manufacturing processes that originate in various departments throughout the plant.

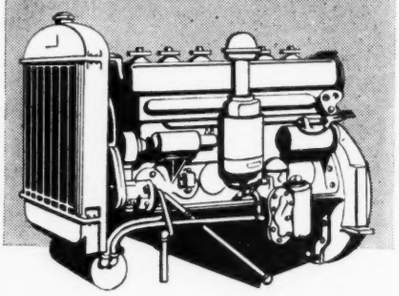
Dwight P. Allen has been elected executive vice-president of Thermoid Co., Trenton, N. J. Associated with the company since 1934, Mr. Allen has served as vice-president and director of manufacturing operations and head of sales to car manufacturers. New director of research for Thermoid is **H. C. Anderson.**

New merchandise manager of the mechanical goods division of United States Rubber Co., of New York City, is **Frank M. Urban,** who began his association with the division as a salesman in 1929.

Follansbee Steel Corp., of Pittsburgh, has announced the appointment of **J. W. Patrick, Jr.,** as manager of warehouses. He was formerly manager of the Philadelphia branch of Peter A. Frasse, Inc.

Pacific Drilling Corp., of San Francisco, has been organized to specialize in churn, rotary and square shaft drilling for test exploration and geophysical borings and industrial drilling. **Walter F. Harcourt-Palmer** was elected president.

Remove Scale



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WHEN mineral-salt scale and iron rust mix with grease in Diesel water jackets and this accumulation is carried into radiator or heat exchanger . . . your engine is heading for trouble. The resulting high-operating temperatures spell out engine abuse, wasted fuel, eventual failure.

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tical applications to company products. Complete blueprints and working drawings of all Heil road machinery products are furnished to the school and, whenever practical, actual products are supplied. Field trips are made to study the equipment on the job.

Vice-president in charge of engineering for Kelvinator Division, Nash-Kelvinator Corp., Detroit, Mich., is **Dr. L. A. Philipp.** He joined the company in 1927 as director of research and became chief engineer in 1939.

G. R. Clover has been appointed sales manager of the newly acquired Rectified Fluorescent and Cooper Hewitt fixture division of The Electro Mfg. Co., Chicago. He was for 25 years representative of General Electric Co.'s Michigan sales district.

* * *

Aluminum Roofing

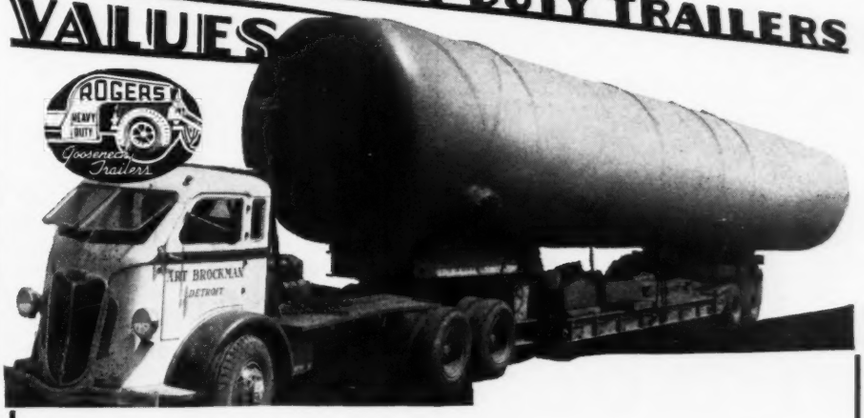
(Continued from page 89)

Overly shops prior to shipment.

For ease of construction it was necessary to build sections of scaffold shelving sufficiently wide to allow a workman to reach the bolt areas easily and to handle the sections of aluminum sheet, bar and battens with minimum effort. An ingenious system of scaffolding

(Continued on page 170)

PLUS VALUES IN HEAVY DUTY TRAILERS



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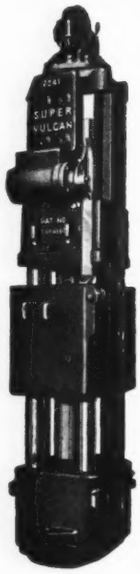

Sizes 18C—30C—50C—80C meet all needs

Get double driving power, faster operation, cost saving efficiency.

VULCAN IRON WORKS Since 1852
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(Continued from page 169)

was worked out which could be shifted about both laterally and vertically. The aluminum sheets were placed in interlocking vertical sections with the upper sheets progressively overlapping the ones below. The top sheet at the upper end of the battens and the caps adjoining the top section were fabricated with a covering cap at the lower end to prevent leakage at that point. The end cap was designed to form a sleeve over the cap and batten and was welded to the base sheet.

All bolts and washers were made of aluminum, utilizing in each case the alloy best suited to meet the requirements of the job at hand.

The completed roof and parapet walls present a compact network of interlocking sliding aluminum joints capable of withstanding any conceivable amount of expansion and contraction. All parts of the roof are readily accessible in the event that emergency repairs are necessary. Actual construction of the roof was begun on Oct. 18, 1945. The final sections of aluminum

(Continued on page 172)

Make sure of home comfort and convenience

with hundreds of design and construction pointers

How you can plan your home to suit you, your needs, your comforts, your purse. Here is a book containing concrete suggestions on the selecting of land, planning the house, the proportion of individual rooms — sound counsel regarding construction, painting and decorating, landscaping, legal matters and financing, with many photographs and figures, floor and room plans, practical lists of pointers.

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By **CLARENCE W. DUNHAM,** Associate Professor of Civil Engineering, Yale University; Consulting Structural Engineer for the New York Engineering Office of the Anaconda Copper Mining Co.
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This useful book considers every practical feature of the house you want to build, down to such specific points as electrical appliances, the good and bad features of heating units, the type of house to build. Details on **the nature of subsurface soil conditions—considerations in determining size of basement—choosing type of construction material**—and many others.

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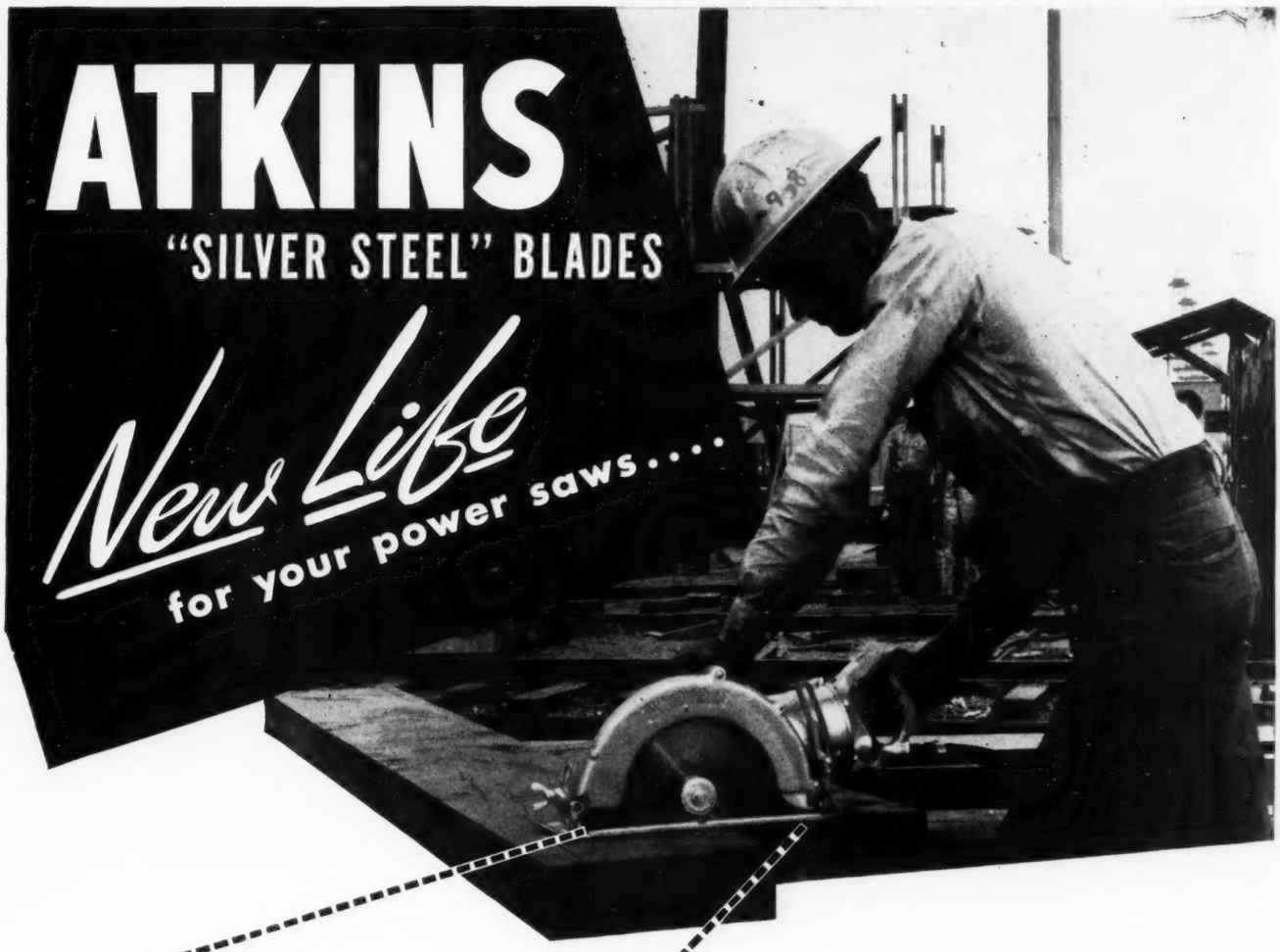
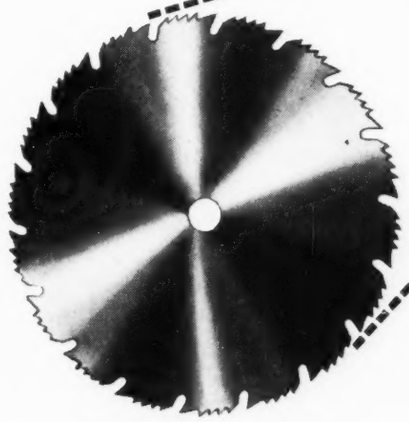
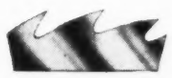
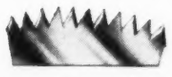




Above is Atkins No. 37 Mitre Tooth Saw, a combination rip, crosscut and mitre saw that is very popular with users of portable machines. Below are shown two of the many other tooth styles available.



Rip tooth for smooth, high speed ripping.



Crosscut tooth for fast, easy crosscutting.

NOTE: While Atkins does not manufacture these portable machines, the company does furnish blades to many of the leading machine manufacturers.

• Getting peak production from every tool is just good sense in the busy days ahead. To get the most out of your portable power saws, do as so many contractors are doing — equip them with Atkins "Silver Steel" Blades. No matter what the job — rip, crosscut, mitre — there's an Atkins Blade to cut it faster, to cut straighter, to cut cleaner, and to keep cooler, even in the gummiest wood.

Made of famous Atkins "Silver Steel," these saws are tough . . . built to stand up under rough and tumble job conditions . . . with teeth that stay keen and reduce time lost in changing blades. Let Atkins Blades speed up *your* job. Write for full information today.

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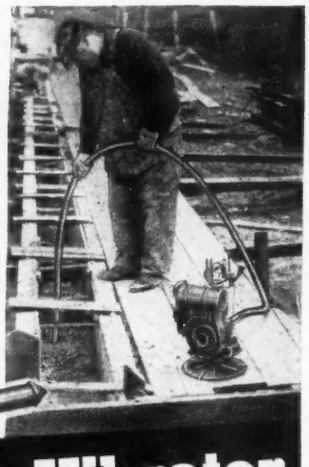

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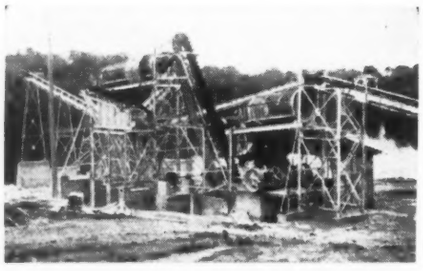

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DISTRIBUTORS IN ALL PRINCIPAL CITIES OF U.S.A.

(Continued from page 170)

sheet were laid on the last day of January, 1946, much of the work having been done under winter conditions.

* * *

Bridge Floor Strengthened

(Continued from page 92)

were pierced by these angles, they were found to be a favorable line for a construction joint.

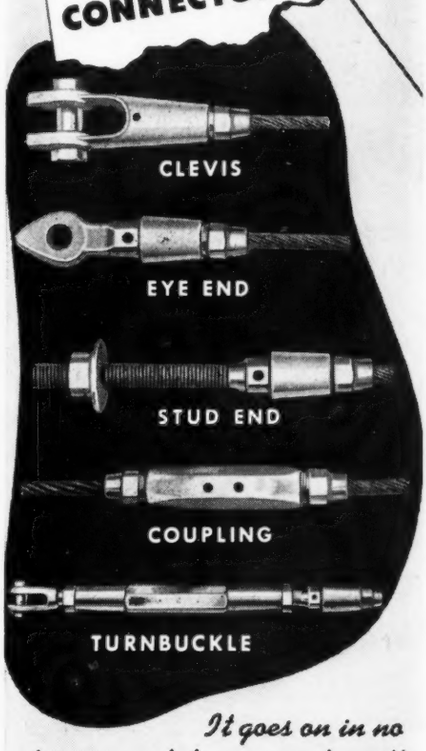
Concrete was delivered in 3-cu. yd. transit-mix trucks from a ready-mix plant located about a mile from the bridge site. Five and one-half bags of Portland and one bag of natural cement per cubic yard of concrete were used. Other characteristics of the mix were: sand, 1,200 lb.; stone, 1½-in. size, 1,870 lb; water, 35 gal. plus aggregate absorption; slump, 3 in. Concrete had practically no movement by its own weight, but it moved very sluggishly en masse with little vibration.

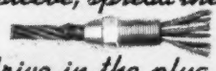
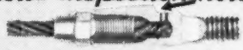
From 4 to 6 sections, averaging 19 ft. in length, were poured daily. Transversely, the slab was poured in two sections: (1) the roadway to inside rail of track, 28 ft., 4 in. in width; (2) track section to curb, 8 ft., 8 in., in width. The roadway sections for full length of the bridge, were poured first from trucks operating over the old pavement of the track section.

The concrete was screeded from the transverse bulkheads, 2x6-in. plank on edge, bolted to clamps with slotted holes for adjusting plank to crown of road. The clamps were welded to the floor plates. The bulkheads were easily bowed to crown of pavement. The concrete surface was wood-floated after screeding from a wooden bridge spanning the panel section, after which it was carefully broomed. Concrete was cured by spraying a membrane on its surface.

The rehabilitation of this bridge at a total cost of approximately $43,000 is claimed to be nominal as compared to the cost of a new structure and in view of the 6 to 8 years additional service it is expected to render.

Stronger THAN THE WIRE ROPE ITSELF . . . this Electroline-FIEGE CONNECTOR



It goes on in no time — and hangs on for all time: this simple, husky device. Simply put the cable end through the sleeve, spread the strands,  *insert and drive in the plug,* *apply the socket and set in tight. Through* *the ingenious inspection hole you can*  *see by the twisted strands that the joint is perfect.*

These better connectors dampen vibration, prolong wire rope life. These advantages, plus low cost installation and life-time service, have made them the standby in the shipbuilding and construction industries, and wherever wire rope and cables are used. Available through your mill supply distributor.

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Worthington-Ransome Blue Brute Distributors

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Worthington-Ransome Distributors

Ala., Birmingham, J. D. Pittman Tractor Company
Ala., Montgomery, Burford-Toothaker Tractor Co.
Alaska, Anchorage, Airport Mac. & Storage Co.
Cal., San Francisco, Coast Equip. Co.
Cal., Los Angeles Golden State Equip. Co.
Colo., Denver, Power Equipment Company
Conn., New Haven, Wilhelm-Davies Co., Inc.
Fla., Miami, Allied Equip., Inc.
Fla., Orlando, Highway Equip. & Supply Company; Tampa, Epperson & Company
Ga., Atlanta, Tractor & Machinery Company
Ida., Boise, Olson Manufacturing Company
Ill., Chicago, Chicago Construction Equipment Co.
Maine, Portland, Maine Truck-Tractor Company
Mass., Allstone, Boston, Clark-Wilcox Co.
Mich., Muskegon, Lakeshore Machy. & Supply Co.
Minn., Minneapolis, Phillippi-Murphy Equip. Co
Miss., Jackson, Jackson Road Equip. Co.
Mo., Clayton, The Howard Corporation
Montana, Billings, Interstate Truck & Equip. Co. Helena, Caird Eng. Works
N. M., Albuquerque, Bud Fisher Co.
N. Y., Albany, Milton-Hale Machinery Company; New York, Hodge & Hammond, Inc.
N. Y., Syracuse, Milton-Hale Mach. Co.
N. D., Fargo, Smith Commercial Body Works, Inc.
O., Cincinnati, Carroll Edwards Co.
Okla., Oklahoma City, Townsco Equip. Company
Ore., Portland, Andrews Equip. Service
S. C., Columbia, Smith Equipment Company
Tenn., Knoxville, Dempster Bros., Inc.
Tenn., Nashville Dempster Bros., Inc.
Tex., Amarillo, T. W. Carpenter Equip. Co.
Texas, Dallas, Shaw Equip. Co.
Utah, Salt Lake City, J. K. Wheeler Mach. Co.
Vt., Barre, A. M. Flanders, Inc.
Wash., Spokane, Andrews Equip. Service
Wisc., Milwaukee, Drott Tractor & Equip. Co. Inc.

Ransome Distributors

Ariz., Phoenix, Lee Redman Company
Ark., Little Rock, Kern-Limerick, Inc.
D. C., Washington, M. A. Doetsch Mach. Company
Ill., Chicago, Thomas Hoist Company
Ind., Fort Wayne, American Steel Supply Corp.
Ky., Paducah, Henry A. Petter Supply Company
La., New Orleans, Ole K. Olson Company
Md., Baltimore, Stuart M. Christhilf & Company
Mich., Detroit, T. G. Abrams
Mo., Kansas City, Brown-Strauss Corp.
Neb., Lincoln, Highway Equip. & Supply Co.
N. J., Newark, Johnson & Dealaman
N. C., Raleigh, Smith Equip. Company
O., Cleveland, H. B. Fuller Equip. Company
Pa., Philadelphia, Giles & Ransome Wilkinsburg, Arrow Supply Company
Tex., El Paso, Mine and Smelter Supply Company Houston, McCall Tractor & Equip. Company

Worthington Distributors

Ark., Fort Smith, R. A. Young & Son Little Rock, R. A. Young & Son
Ind., Indianapolis, Reid-Holcomb Company
Ky., Louisville, Williams Tractor Company
La., New Orleans, Wm. F. Surgi Equip. Company
Md., Baltimore, D. C. Elphinstone, Inc.
Mass., Cambridge, Field Mach. Company
Mich., Detroit, W. H. Anderson Co., Inc. Flint, Gransden-Hall & Company
Mo., Kansas City, Mach. & Supplies Co.
No. Bergen, American Air Compressor Corp.
N. M., Roswell, Smith Machinery Company
N. Y., Buffalo, Dow & Co., Inc. New York, Air Compressor Rental & Sales Olean, Freeborn Equip. Company
N. C., Raleigh, Carolina Tractor & Equip. Co.
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Pa., Allentown, H. N. Crowder, Jr., Inc. Easton, Sears & Bowers Harrisburg, American Equip. Corp. Oil City, Freeborn Equipment Company Pittsburgh, Atlas Equip. Corp.
Pa., Phil. Metalweld, Inc. Wilkes-Barre, Ensminger & Company
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BUY BLUE BRUTES

Worthington Pump and Machinery Corp.

Worthington-Ransome Construction Equipment Division

Holyoke, Massachusetts

PRODUCTION STEEL NOW!

Government-owned High Quality Surplus Priced For Substitute Uses

If you need fabricating bar alloy stock now and are willing to adapt top quality material priced at or near carbon steel prices—here is real opportunity. Over 25,000 tons of hot rolled and 25,000 tons of cold finished carbon and alloy steel bars are ready for immediate shipment to you. The stock is available in standard sizes, shapes, but is of above average grades. Accordingly it has been priced at levels such as to insure its quick employment to meet America's postwar needs. For details on F.O.B. locations, sizes, quantities and shipping arrangements contact your nearest W. A. A. Regional Office below . . . or clip and mail this coupon.

VETERANS OF WORLD WAR II: To help you in purchasing surplus property from W. A. A. a veterans' unit has been established in each of our Regional Offices.

FREE INFORMATION

To War Assets Administration:

Please send me information on the availability and pricing of the following:

- Carbon and Alloy Billets, Blooms, Slabs, Rods, etc. ☐
- H. R. & C. F. Alloy Sheets, Strips and Plates ☐
- Stainless Steel Sheets, Strips, Standard Types ☐
- Valves and Fittings ☐
- Mechanical Tubing, Carbon and Alloy ☐

NAME..... TEL. NO.....

FIRM.....

ADDRESS.....

CITY..... STATE.....

157-5

WAR ASSETS ADMINISTRATION

OFFICES LISTED BELOW ARE TEMPORARILY IN RECONSTRUCTION FINANCE CORPORATION AGENCIES

Offices located at: Atlanta · Birmingham · Boston · Charlotte · Chicago · Cleveland · Dallas · Denver Detroit · Helena · Houston · Jacksonville · Kansas City, Mo. · Little Rock · Los Angeles · Louisville Minneapolis · Nashville · New Orleans · New York · Oklahoma City · Omaha · Philadelphia Portland, Ore. · Richmond · St. Louis · Salt Lake City · San Antonio · San Francisco · Seattle · Spokane Cincinnati · Fort Worth (Telephone 3-5381)

SURPLUS HOBART ARC WELDERS

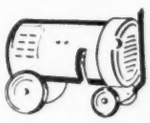
200, 300 AND 400 AMPERE RATINGS

Three million dollars worth of surplus Hobart Arc Welders *must* be sold between May 15th and June 15th. Most of this equipment is of the MG type but some quantity is available in gasoline driven units. Arrangements may be made to inspect the offered items. Largest inventories are located at Boston, Detroit, Cleveland, Chicago, Atlanta, Kansas City, Richmond and Philadelphia—but information on availability, condition and location may be obtained at any of the War Assets Administration Regional Offices listed below. The equipment will be sold on a "where is, as is" basis . . . used or unused . . . and priced accordingly. For full information contact the nearest office listed below or check and mail this coupon.

ALSO MANY OTHER TYPES OF WELDING AND FLAME CUTTING EQUIPMENT

LINCOLN
Hundreds of Lincoln Arc Welders in the popular 300-400 Ampere size are also available; some gasoline engine driven.

WESTINGHOUSE
Flexarc equipment for production or construction operations is available in smaller quantity. Also other standard makes and ratings.



RESISTANCE WELDERS
Spot Welders located in Philadelphia, Detroit, Chicago, Los Angeles, Cleveland and Kansas City; *Seam Welders* in Cleveland, Chicago, Detroit, Birmingham, Boston and Philadelphia. Also *Flash Welders.*

WELD POSITIONERS
In standard sizes and types, are located in Detroit, Boston, Chicago and New York.

FLAME CUTTERS
Save production time and money with portable or stationary, single or multiple torch flame cutting machines. All types of gas cutting equipment available for quick sale.

VETERANS OF WORLD WAR II—To help you in purchasing surplus materials, a veterans' unit has been established in each War Assets Administration Regional Office.

FREE SALE FACTS

To War Assets Administration:
Please send me information prior to your sale on the availability, condition and location of Hobart Arc Welders of the following

types:..... and ratings:.....
.....
.....

I am also interested in:—

- ☐ LINCOLN ARC WELDERS
- ☐ SPOT, SEAM, FLASH WELDERS
- ☐ WESTINGHOUSE ARC WELDERS
- ☐ WELD POSITIONERS
- ☐ .....ARC WELDERS (other)
- ☐ FLAME CUTTERS

Name.....
Firm.....
Address.....
City..... State..... 176-2

All items subject to prior sale

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WILL DRY UP ANY EXCAVATION
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3-Speed . . . ALL-STEEL
HAND WINCH

2 Sizes

5-ton capacity — 135-lb. spools, 325' of ½" cable $85
3-ton cap'y — 75-lb. spools, 150' of ½" cable $60

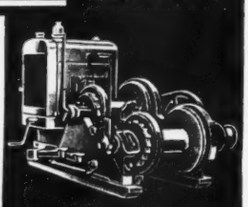
POWER FOR HEAVIER LOADS, SPEED FOR LIGHT LOADS. Gear Ratios: 25 : 1, 4 : 1, 1 : 1.

Write for circular and name of nearest dealer. A few territories are open for live distributors.

Manufactured by
RAMSEY MACHINERY CO.
1620 N. W. THURMAN ST., PORTLAND, ORE.

C. H. & E. CONSTRUCTION EQUIPMENT

Single and Double Drum Hoists
Complete line of hoists with lifting capacities from 500 to 7000 pounds. Either gasoline engine or electric motor drive. For hoisting brick, mortar, building materials, pile driving and placing steel.



C. H. & E. Manufacturing Co.
Milwaukee, Wis.

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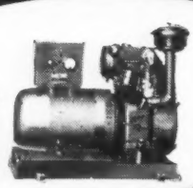
(Classified Advertising)
"OPPORTUNITIES"
EMPLOYMENT BUSINESS
EQUIPMENT USED OR RESALE
RATES: 10c word. $2 minimum or $8.50 per inch per insertion.
Additional Searchlight Advertising on pages 174-175

STERLING QUALITY **STERLING LIGHT PLANTS**



SIMPLE
DEPENDABLE
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WRITE FOR LITERATURE

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HEAVY CONSTRUCTION EQUIPMENT

4—4 yard Koehring Concentric Tilting type heavy duty Electric-driven MIXERS.
4 & 5 ton Goodman battery LOCOMOTIVES 36" gauge.
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1—200 ton Noble BATCH PLANT.
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200'—500' 24" BELT CONVEYORS complete with Motors.
7'x23'x⅞" thick Manganese TROMMEL SCREEN.
48"x22' PAN FEEDER.
125' STACKER FRAME.
1—1 yard overhauled Model 4 Northwest SHOVEL.
1—1 yard Bucyrus Diesel-driven SHOVEL.
1—1¼ yard Bucyrus GA-2 Combination SHOVEL & CRANE.
and many other items of heavy construction equipment.

Subject to prior sale.

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GEORGE HAISS MFG. CO., INC.
139th ST. & CANAL PL., NEW YORK 51, N.Y.

HAISS CLAMSHELL BUCKETS

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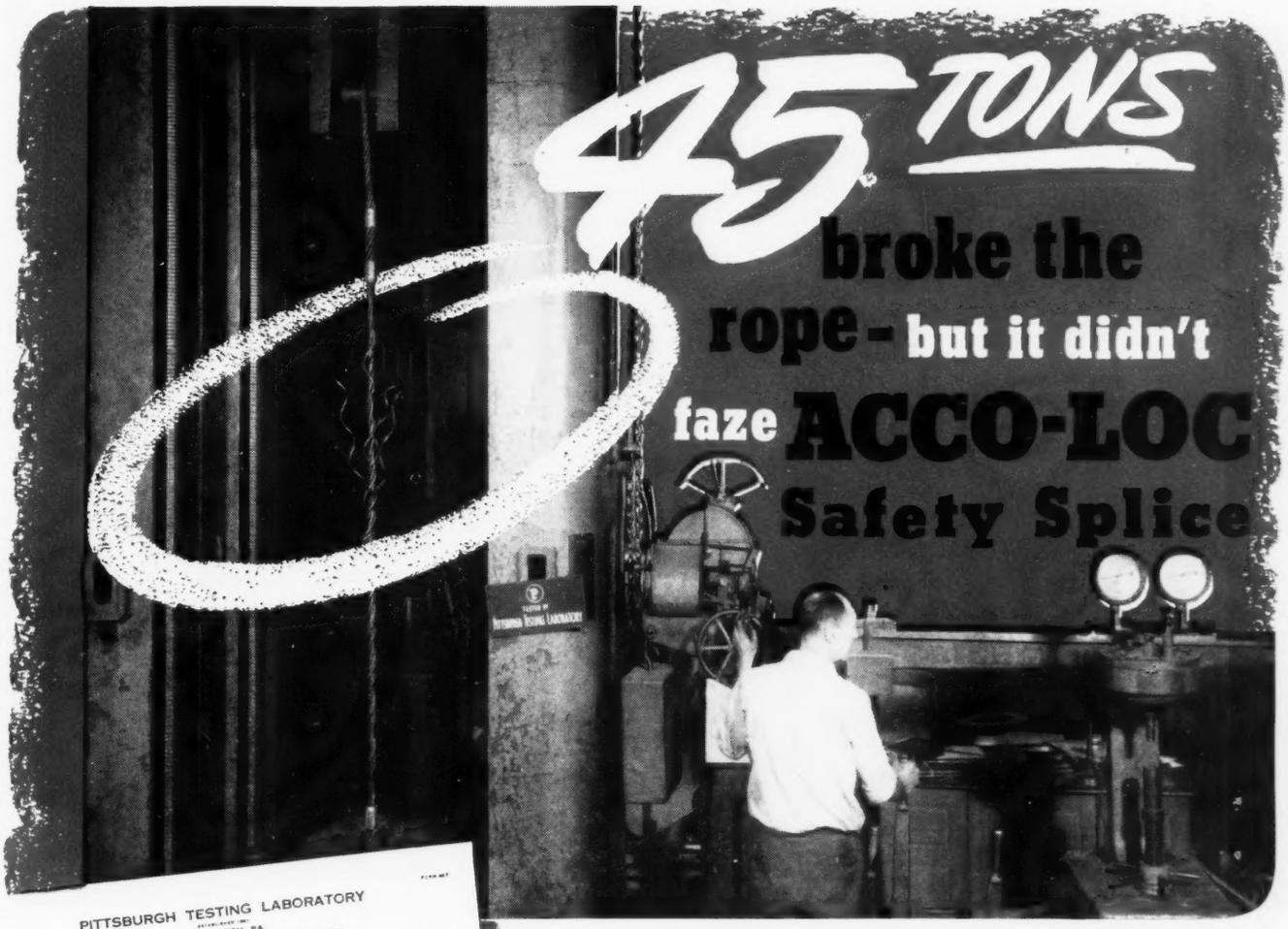


45 TONS broke the rope - but it didn't faze ACCO-LOC Safety Splice

PITTSBURGH TESTING LABORATORY
PITTSBURGH, PA.

LABORATORY No. 265985
FILE No. 11209.19

IN No. PH-796
MFR'S NO.

REPORT

July 14, 1945

ensile test of - Wire Rope assemblies made of 6x19 PREFORMED Improved Plow Steel Wire Rope with Independent Wire Rope Center with ACCO-LOC SAFETY SPLICE Loop on each end.

eported to - American Chain & Cable Co., Inc. Wilkes-Barre, Pa.

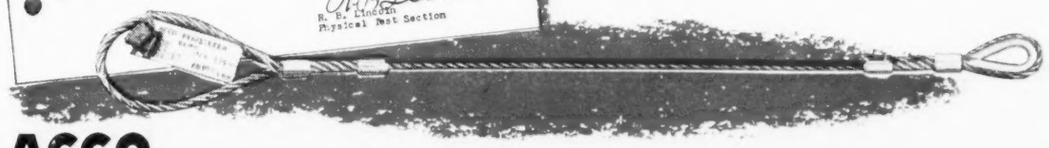
TEST NO.	ROPE DIAMETER	ACTUAL BREAKING STRENGTH	MINIMUM REQUIRED BREAKING STRENGTH	TYPE OF FRACTURE
1	3/8"	14,680#	12,800#	4 strands & center
2	3/8"	14,680#	12,800#	5 strands & center
3	3/8"	14,660#	12,800#	5 strands & center
4	1/2"	26,010#	21,400#	4 strands & center
5	1/2"	25,850#	21,400#	4 strands & center
6	1/2"	26,050#	21,400#	4 strands & center
7	3/4"	51,250#	49,900#	3 strands & center
8	3/4"	50,900#	49,900#	4 strands & center
9	3/4"	51,750#	49,900#	3 strands
10	1"	91,000#	87,600#	4 strands & center
11	1"	94,550#	87,600#	5 strands & center
12	1"	95,050#	87,600#	3 strands & center

RESULTS:
1. All specimens exceeded the minimum required breaking strength.
2. After testing, all ACCO-LOC SAFETY SPLICES were intact. None showed visible deformation.

NOTES:
1. All minimum breaking strengths from Federal Specification RR-R-571a for Wire Rope, dated May 8, 1945. Reference Table XXVI for 3/8" die. rope, plus 7-½ for IWRC. Reference Table XXVIa for 1/2", 7/8" and 1" dia. wire ropes.
2. For tests 1 to 9 and 12 inclusive speed of testing machine 1-1/16" per minute.
3. For tests 10 and 11 speed of testing machine 7/16" per minute.

PITTSBURGH TESTING LABORATORY
R. E. Lincoln
Physical Test Section

⅜" to 1" TRU-LAY Preformed wire ropes, equipped with ACCO-LOC Safety Splices, pulled to destruction — without the slightest effect on the rope terminals. That test was made by the Pittsburgh Testing Laboratories. But it is in the thousands of plants where ACCO-LOC Safety Splices are daily proving their 100% efficiency that the test of true worth is appreciated. — Compact, neat, flexible, made without distortion of rope structure, the ACCO-LOC Safety Splice is a revolutionary advance for wire rope endings. Send today for fully detailed literature.



ARMY NAVY

ACCO Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Emlenton, Pa., Houston, Los Angeles, New York, Philadelphia, Pittsburgh, Portland, San Francisco, Tacoma, Seattle, Bridgeport, Conn.

AMERICAN CABLE DIVISION
AMERICAN CHAIN & CABLE

TRADE MARK

In Business for Your Safety

IT'S A BEAUTY FOR LOOKS... A BRUTE FOR WORK

This Worthington 210′ Blue Brute Compressor is a brute from the word "Go". It pushes out air to those WJ-45 Rock Drills with an ease that means everything from low fuel consumption to long years of the hardest kind of work.

Underneath that handsome exterior is a "heart of steel" — the Worthington Feather* Valve that users recognize as the simplest, most efficient ever made. You'll also find such money-saving features as three-point suspension of engine and compressor as a single unit (that's for eliminating vibration and shock) . . . force-feed lubrication . . . an exclusive idling control . . . and other Worthington features that help you turn the fewest dollars of power into the greatest amount of work, meanwhile keeping the machine fit in the face of the most rugged service.

Hook up the 210 with Blue Brute Rock Drills, Paving Breakers or other Air Tools and watch them tear into their work. You'll be getting a first-hand picture of why *there's more worth in Worthington!* See your nearby Worthington distributor.

*Reg. U.S Pat. Off.

H6-3

KNOW YOUR BLUE BRUTES

Your Blue Brute Distributor will gladly show you how Worthington-Ransome Blue Brute construction equipment will put your planning on a profitable basis. His name is listed on page 173. Blue Brutes include:

RANSOME EQUIPMENT

Pavers, Concrete Spreaders**, Concrete Mixers, Concrete Placing Equipment, Big Mixers, Finishing Machines**, Pneumatic Placing & Grouting Equipment, Truck Mixers, Plaster & Bituminous Mixers, and related equipment.

WORTHINGTON EQUIPMENT

Diesel and gasoline engine driven Portable Compressors from 60 to 500 cu. ft. capacity in mountings to suit all jobs; Rock Drills and Air Tools in a wide range of weights and sizes; Contractors' Pumps**.

**To be announced

Get more **WORTH** *from air with* **WORTHINGTON**

BUY BLUE BRUTES

Compressors from 60 to 500 cu. ft. capacity in mountings to suit all jobs. Rock Drills and Air Tools that have always set the pace for easy operation — available in a wide range of weights and sizes.

WORTHINGTON

Worthington Pump and Machinery Corporation, Worthington-Ransome Construction Equipment Division Holyoke, Mass.